INTERIM REPORT

OF THE

NATIONAL COMMISSION ON AGRICULTURE

ON

FERTILISER DISTRIBUTION

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
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SUMMARY OF RECOMMENDATIONS

Fertiliser consumption and demand

Fertiliser Demand

1. In order to determine the fertiliser requirements for achieving the agricultural production targets fixed under the Fourth Plan, a special Expert Team should analyse the present production trends, responses to fertilisers and the actual dosages adopted in the field and make a fair estimate of the fertiliser requirements that will have to be assured. The strategy for fertiliser consumption will have to be firstly proper estimation of our requirements of fertilisers based on the agricultural programmes followed by a study of the factors inhibiting the growth of fertilisers in any area. Steps will have to be taken thereafter to remove the bottlenecks and lay down an aggressive fertiliser promotion. (Paragraphs 2.8 & 2.9)

Need for Balanced Fertilisers

2. Requirements of fertilisers should also be estimated on the basis of balanced application of fertilisers taking into account soil studies and field trials. (Paragraph 2.11)

FERTILISER PRODUCTION

Production Programme

3. In view of the slackness in the production of fertilisers in the country, the Ministries of Petroleum and Chemicals and Agriculture should closely examine the working of the factories and initiate corrective action to increase the percentage utilisation of indigenous production capacity to the level expected by the Committee on Fertilisers. (Paragraph 3.5)

Inadequate Planning for Phosphates

4. A suitable programme should be formulated for upgrading the nutrient content of fertilisers issued from the super phosphate factories. (Paragraph 3.6)

5. It will be better that in future all fertiliser plants produce complex/compound fertilisers of required grades. The unit or units for production of basic phosphate nutrient for incorporation in the production of the FCI factories which now produce only urea may be expeditiously constructed to enable the FCI units to market suitable complex granulated fertilisers. Arrangements to utilise saladipura pyrites and Rajasthan rock phosphates require to be speeded up. The Rajasthan complex of phosphate ingredients should be put into operation not later than 1975-76. (Paragraphs 3.7, 3.8 & 3.9)

EXTENSION AND SLAE PROMOTION ACTIVITIES

Fertiliser Promotion

6. Keeping in view fertiliser pomotion work which the fertiliser producers will be doing, the Ministry of Agriculture with the cooperation of the State Governments should fill up only the gaps in the fertiliser promotion programme in the country. These gaps are:

(a) Areas in the country which are not the main marketing centres of any of the producers of fertilisers;

(b) Areas in the country where more than one producer has a marketing organisation but it is not massive enough for effective promotion programme.

These areas should be identified in consultation with the various fertiliser producers and the fertiliser promotion by the Ministry of Agriculture should be concentrated in such areas.

(Para-graph 4.19)

7. The Commission support the departmental fertiliser promotion scheme of the Ministry of Agriculture with the modification that the areas of operation may be defined as in the Recommendation No. 6. The field organisations should work under the control of the State Departments of Agriculture for best effect. The programme may be a Centrally sponsored one. (Paragraph 4.23)

Promotion of Balanced Fertilisers

8. Steps should be taken to promote balanced fertiliser application by making available adequate quantities of complex/compound fertilisers. All fertiliser producers should demonstrate the utility of balanced fertilisers of which their brand product comprises one part. (Paragraphs 4.26 & 4.28)

SOIL ANALYSIS AND TESTING FACILITIES

Soil Analysis

9. Though a lot of development has taken place in the provision of soil analysis service, much more will have to be done to ensure that fertiliser application is based on proper soil analysis. Extension of soil analysis service in the States not only in the areas where the fertiliser promotion will be done by the Department, but also in the areas where the fertiliser companies will be doing the promotion but the services are irregular, may be organised by the Ministry of Agriculture as a Centrally sponsored programme. The producers should intensify their soil analysis service in the interest of promoting large scale adoption of balanced fertiliser application based on systematic programme of soil analysis. (Paragraphs 5.18 & 5.19)

ARRANGEMENTS FOR RETAIL DISTRIBUTION—STORAGE

Responsibility for Storage

10. Since the bulk of storage is to be on the factory or the main distributor, the stocks should move from these storages to the consuming centres almost straight. There should be one recognised storage point from the factory storage or the main distributor storage to the farmer. In case of retailers who indent wagon loads of fertilisers (or a truck load where truck transport is availed of), the stocks should move directly from the factory storage or main distributor storage to the retailer storage point. In the case of smaller retailers who indent stock through wholesaler intermediaries, the storage point has to be at the wholesale level and stocks should move to the wholesaler in wagon loads or truck loads for further distribution to the retailers in small quantities. These retailers need not maintain any elaborate storage and can be given only a nominal storage charge per tonne. (Paragraph 6.5)

Intermediate Storage of Factory Supplies

11. Producers should, in addition to their silo storage at the factory, provide on the average three months, storage at the consuming centres at intermediate storage points. An additional provision of three months' storage at the wholesaler level or the retailer level whoever maintains the retail level storage point shall be sufficient. (Paragraph 6.6)

12. The silo storage shall be a standby so that supplies to the consumer may not be held up by occasional production

breaks or maintenance breaks. Silo storage shall also act as a buffer to hold up production stocks where railway allocations are not smooth and daily production cannot be moved out to demand points automatically. The cost of six weeks' storage provided in silos at the factories is to be treated as part of production costs and not of distribution costs. This storage shall not be confused with the intermediate storage that has been recommended. (Paragraph 6.7)

13. To solve the problem of additionality of inter-State sales tax, the factories can maintain the storage on factory account in the State of consumption and minimum stock of storage as a factory movement. The main distributor of the factory will then handle sale from the intermediate storage to the local dealers. In respect of cooperatives, it will be advisable to divide the agreement between the producers and the cooperatives so that the producer is reckoned as a storage agency and the co-operatives a distribution agency treating the sales from the intermediate storage as sales from the factory to the wholesaler or retailer whoever is transferring the stock to his local storage. (Paragraphs 6.8 & 6.11)

14. As the three month's holding of stocks in the intermediate storage is a necessary part of the fertiliser distribution system, the required loan accommodation to producers must be forthcoming on reasonable margins and interest rates. The problem of giving such credit must be solved. (Paragraph 6.10)

15. The National Cooperative Development Corporation should negotiate with the Fertiliser Corporation of India and other producers for utilisation of cooperative storage facilities for purposes of intermediate storage by the factories. They should also arrange to put up additional storage godowns at locations where these are wanted for intermediate storage. (Paragraph 6.12)

Storage of Pool Supplies

16. In order that the timely supplies of fertilisers to the farmer are assured, the Pool shall hold stocks at different points on the following basis:

(a) Port storage to be organised by the Pool for atleast 1½ months receipts at the port to allow for railway transport difficulties from port and bunching of ships;

(b) Good storage for at least 5 lakh tonnes of fertilisers (two months stocks) in bags to be provided by the Pool at suitable intermediary storage points;

(c) Buffer stock storage for at least one month's Pool stock (2½ lakh tonnes) to be provided by the States on the basis of their receipts pattern from the Pool;

(d) Good intermediate storage to be provided by the co-operative sector at marketing society level for three month's Pool stocks (7½ lakh tonnes); and

(e) Storage to be provided at primary cooperative level for one month's stocks of the Pool (2½ lakh tonnes).

(Paragraph 6.17)

17. For holding 5 lakh tonnes of good intermediate storage for stock operations, the Pool should assist the cooperative organisation to put up the storage accommodation at convenient centres. For this purpose, the Pool should provide a subsidy of 25% of the cost, i.e., about Rs. 1.75 crores, to the cooperative organisation in a phased manner. Similarly, the States may provide 25% subsidy, i.e., about Rs. 87.5 lakhs, for construction of storage accommodation for 2½ lakh tonnes. For 10 lakh tonnes storage of Pool stocks at the marketing society and primary cooperative levels, the State resources, earmarked for godown construction in the cooperative sector, may be diverted completely to the subsidy element with the proviso that the subsidy may be 25% of the cost of construction in the case of marketing societies and 37½% in the case of primary cooperatives.

(Paragraphs 6.20 & 6.22)

ARRANGEMENTS FOR RETAIL DISTRIBUTION—TRANSPORT

Railway Transport

18. The Railways shall provide full transport for fertiliser movement for the months of March, April and May and again in the months of August, September and upto the 15th October for long distance haulage. During the other remaining months, long distance haulage may preferably be organised in rake-loads of at least 1,000 tonnes at a time. Since all movements cannot be in rake-loads, it has to be a mixture with accommodation on both sides. To organise long distance traffic, advance programming for the two major seasons shall be done by the fertiliser producers. For movements in the zone of their home

railways, the fertiliser producer shall negotiate with the home railway. For inter-railway movements, the producers shall submit the programmes to the liaison group in the Ministry of Agriculture, who will in turn coordinate and present a consolidated picture to the Railway Board for advance programming of inter-railway movements in each season. For this purpose, the liaison group in the Ministry of Agriculture should be adequately strengthened. (Paragraphs 7.4 & 7.5)

19. For long distance haulage in March, April and May and again in August, September and up to 15th of October, the Railways should provide closed wagons as far as possible. The producers can also help the Railways by accepting rake-loads to intermediate storage points in open wagons during fair weather. The Railways should supply tarpaulin and allow passes for the guards to be provided by the fertiliser producers on the trains. Where a rake has been accepted by the producer, the Railways shall provide the facilities of directional movement with wagons being earmarked for a limited number of stations in one direction. (Paragraph 7.6)

20. The Railways should grant concessional freight for movement of fertilisers to intermediate storage points also. For this purpose, the Railways should make necessary amendment to their rules. (Paragraph 7.8)

21. The Railways shall give Class 'C' priority to the programmed movement of fertilisers for long haulage. (Paragraph 7.10)

22. The present requirement of End-use Certificate from the District Agricultural Officer of the destination for entitlement to concessional freight rates for fertilisers should be done away with. If at all a certificate has to be given, the responsibility should be on the despatcher. (Paragraph 7.11)

23. Short haulage on railways from intermediate storage points to registered sale points should normally be a movement of more than 200 kms. The Railways should accept shorter distance booking where the road movement is not possible because of lack of bridges. (Paragraph 7.12)

Transport of Fertilisers to Interior and Backward Areas

24. The fertiliser producers should evolve a system, on the pattern of the Pool, to deliver fertilisers at four convenient road

heads in each district which has poor railway connections and the transport costs by road to the road heads should be averaged in the transport cost of the factory. The Fertiliser Corporation of India must set the lead by accepting such road heads for delivery to the wholesaler or to the retailer. Since even this will not provide good marketing toareas too far away from the rail heads, the Fertiliser Pool must specially nurture the distant markets and continue to provide the transport subsidy for the road transport to these areas. (Paragraph 7.13)

25. For delivery at road heads in districts poorly served by railways, the cooperative organisation should put up intermediate storage at these road heads for use by the Pool. The Pool may, in the next three years, allocate about Rs. 47 lakhs each as subsidy for this programme to the cooperative sector. The cooperative sector should get the balance from the banking sector. The programme may be handled by the National Cooperative Development Corporation. (Paragraph 7.14)

Problem of Shortages in Transit

26. To compensate for shortages in rail transit in respect of Pool supplies, the Pool should give half per cent per tonne of the value of fertilisers to the cooperatives as a special allowance and include it in the distribution margin. (Paragraph 7.20)

ARRANGEMENTS FOR RETAIL DISTRIBUTION—MARGINS

Incentives to Cooperative System—Promotion Incentive.

27. The Pool may allocate to the cooperative sector an additional Rs. 2 per tonne (making in all Rs. 4 per tonne) of fertiliser supplied as promotion incentive. This will support the fertiliser promotion venture. In order that the incentive bonus produces the desired result, a fair margin to the primary societies and the various links should be ensured according to the responsibilities undertaken. (Paragraphs 8.6 & 8.7)

Inventive Margin for Factory Supplies

28. All fertiliser producers should give special margins for bulk purchases to the apex organisations. The National Cooperative Development Corporation should urge the apex organisations in the States to negotiate bulk purchase contracts with the Fertiliser Corporation of India and other fertiliser producers. (Paragraph 8.10)

Storage Margin for Factory Supplies

29. In addition to the 30 days' credit given by the fertiliser producers, three months' interest charges should be provided in the distribution margin between the wholesaler and the retailer together. Where the fertiliser is moved directly to the retailer and the wholesaler acts as a go between, the one month credit allowed on the goods should be sufficient for the wholesaler. Three months' credit or in the case of quick selling fertilisers whatever is the fair interest charge should go to the retailer. Where the goods are stored by the wholesaler and then passed on to the retailer, interest charges of three months should be divided between them suitably according to the relative responsibility for holding the stocks. (Paragraph 8.11)

30. The storage charge of three months will be paid to the retailer if he takes stocks directly from the factory or the main depot and to the wholesaler if he acts as the storage point for smaller retailers. In the latter case, a nominal temporary storage charge of Rs. 1.50 per tonne should be added in the margin to be paid to the retailer. Three months' storage charge with handling and loading alongwith interest charges for the holding for three months on the average should accrue to the factory or the main distributor whoever undertakes this responsibility in the fertiliser distribution chain. (Paragraphs 8.12 & 8.13)

Transport Margin for Factory Supplies

31. There must be a rationale in the allowance of transport margin to wholesaler and retailer to ensure transport of fertilisers to interior areas. The fertiliser producers must follow one of the two alternatives as given below and provide necessary margins in their terms of business to wholesalers and retailers;

(a) Estimates the distance from railhead to the wholesalers' or retailer's godowns to which th fertilisers move and fix for each wholesaler and each retailer a transport margin per tone of fertiliser he takes.

(b) Divide the wholsalers and retailers who take stock into 3 or 4 classes based on the distance of the godown from the railhead and given slab rates to avoid individual calculation.

In dealing with the cooperative marketing system at its apex, the producer can work ont an average transport charge which can be based on accepted pattern of distribution to retail heads

and the task of paying actual transport to marketing societies and primary cooperatives can be left to the cooperative organisations. (Paragraphs 8.15 & 8.16).

Revised Break up of Distribution Margins

32. In the distribution margin, the margin for transport charges from rail head destinations to wholesalers' and retailers' godowns should be increased from Rs. 10/- to Rs. 15/-. Provision for handling charges should be raised from Rs. 5 to Rs. 8. The storage charges should be raised from the present 80 paise per tonne per month to Rs. 1.50 per tonne per month for an average holding of stocks for six months. The interest allowance should be raised from 8% to 10%. Paragraph 8.21 contains the details of the revised break-up of distribution margin. These recommendations do not, however, mean any rise in prices to the farmer at this stage. (Paragraphs 8.17 & 8.19)

33. For Ammonium Sulphate and C.A.N., the following modifications in the distribution margins should be made:

(a) As against a total storage period of 6 months on the average for every fertiliser, the storage period for these two fertilisers may be limited to 3 months on the average and the storage and interest charges for these to be divided one month to the producer and two months to the distributor, both wholesale and retail, according to relative responsibility;

(b) Full transport margin should be provided in the contracts with the wholesalers and retailers as for any other fertiliser according to distances from railheads to distribution point;

(c) Handling and loading charges should be allowed as for the other fertilisers;

(d) There is no need to provide any incentive commission as for other fertilisers. Commission to the dealers and for shortages should be allowed as for other fertilisers. (Paragraph 8.18)

Distribution Margins for Muriate of Potash

34. The Central Fertiliser Pool should enhance suitably the allowance for expenditure on promotion by the Indian Potash Supply Agency. A suitable incentive commission to the cooperatives may also be provided in the distribution margin for Muriate of Potash. The Pool may re-imburse to the IPSA the cost of interest free credit. (Paragraphs 8.23 & 8.26)

Problem of Old Stocks with Cooperatives

35. The un-sold stocks of the cooperatives should not be allowed to continue as a burden on them. It will be necessary to wipe off the account on the basis of the Pool and the State Government bearing the expenditure on 50:50 basis. (Paragraph 8.33)

Cooperatives—Concluding Observations

36. Cooperatives should organise their system to make fertiliser distribution more efficient. They should ensure that margins are distributed fairly according to the responsibilities undertaken by the various parts of the system. (Paragraph 8.35)

FERTILISER CREDIT

Difficulty of Small and Marginal Farmers to get Credit

37. The present norms of lending in terms of requirements per acre of credit and rate of interest should be changed in order that the small farmers may be helped to afford the increased outlay needed for intensive agriculture. State policy should be specifically oriented to give preferential treatment in a number of ways to the small farmers. The cultivators' credit being limited, means have to be found to ensure that a substantial portion of this credit goes to the small farmers and marginal farmers to largely meet their requirements. (Paragraph 9.13)

Direct Loaning to Cooperative Primaries

38. The system of direct loaning to primaries by commercial banks has to be extended to areas where the cooperative structure is weak. In such areas, A.C.D. funds can also be routed through the commercial banks for direct loaning to the primaries. (Paragraph 9.16)

Taccavi Credit

39. The six months' credit being given by the Centre to the States should continue to be made available to the States, where the cooperative system is weak, for running the Taccavi system of purely fertiliser distribution to the small and marginal farmers. Arrangements will have to be made through the Taccavi system financed on six months' credit basis purely for fertilisers to provide the required fertilisers in areas where the small farmer's and marginal farmer's schemes are working and where a

credit worthy society does not exist. The amount of accommodation for the purpose could be of the order of Rs. 50 to Rs. 60 crores to be turned over every six months. (Paragraph 9.17)

40. The system of routing Taccavi through Block Development Organisation for increasing fertiliser sales, as in Haryana, should be adopted for the small and marginal farmers by all States Governments and given a fair trial. (Paragraph 9.18)

Retailers' Credit Guarantee Scheme

41. Where a retailer does fertiliser business plus other business, his limit under the Credit Guarantee Scheme should be increased so that at any time he holds Rs. 40,000 worth of fertiliser alone plus any other limit for other goods in order that the sale of fertiliser undertaken by him can be brought within the scope of the Guarantee Scheme. (Paragraph 9.21)

Refinancing Facilities for Fertiliser Loans

42. As the fertiliser prices are not expected to come down significantly and the stocks will also be pledged with the banks, the margin requirement should be substantially brought down. The margin should not exceed 10 per cent. Restrictions on bank credit for fertilisers have to be removed and the facility of refinancing restored. (Paragraph 9.22)

QUALITY ASPECTS OF FERTILISERS

Factors accounting for deterioration in quality—deterioration due to storage

43. Measures to introduce efficient methods of storage should be intensified so that one of the basic factors giving rise to complaints regarding loss of quality is removed. (Paragraph 10.6)

Quality Control at the Manufacturers' Level

44. Fertiliser factories that are licensed in future and such other factories which do not have quality control facilities should be required to institute quality control on fertilisers including methods of statistical quality control. The Indian Standards Institution should address itself to establish standards for fertilisers where these are not available. The manufacturers should be induced to come under the ISI quality marking system. ISI

should also bring out standards for fertiliser-pesticide mixtures in anticipation of their becoming a part of the future consumption pattern. (Paragraphs 10.9 & 10.10)

Quality Control at the Distribution Level

45. The manufacturers and the State Departments of Agriculture should take steps to enlarge their activities in the matter of drawing samples at frequent intervals, analysing them and bringing the results of analysis to the attention of the farmers. State-wise and district-wise targets for the drawal and analysis of fertiliser samples should be fixed. The period of sampling should coincide as far as possible with the storage time of fertilisers at the consumer end. The State Governments should adequately strengthen their organisational set up for quality control by equipping their laboratories for handling increasingly larger number of samples. In order to ensure that sub-standard fertilisers are not sold to the farmers, it is necessary that the results of the analysis of samples are made available within 15 days from the date of drawal of samples. (Paragraphs 10.11 & 10.12)

46. The feasibility of supplying high analysis fertilisers in small sealed packs of 15 to 20 kg. corresponding to per acre requirements of nutrients should be examined. Where the supply in small sealed packs is economically not feasible, the system under which farmers could jointly buy fertilisers in large packs and distribute among themselves according to individual needs may be tried by cooperatives. (Paragraphs 10.13 & 10.14)

Standardising Methods of Sampling and Analysis

47. The methods of drawal and analysis of fertiliser samples should be uniform all over the country and brought within the scope of the Fertiliser (Control) Order and the quality marking system of the Indian Standards Institution. A Central Committee of analytical chemists representing the Agricultural Universities, the ICAR, the State Agricultural Departments, the fertiliser industry, the Indian Standards Institution, the National Test House and other quality control laboratories at the national level should be constituted to undertake the task of formulating standard methods of analysis and exercising periodical reviews. A Central Laboratory should also be set up to keep continuous vigilance in the matter of updating quality control measures and disseminating information to the State Laboratories. The Central laboratory should also have arrangements for training

the quality control personnel engaged in the drawing and analysis of fertiliser samples in all the States. (Paragraph 10.15)

Arrangements for Rapid Testing

48. The existing State laboratories need to be strengthened both in terms of equipment and staff so as to ensure that the results of analysis flow back to the field more rapidly. Faster analytical procedures should be developed. Rapid chemical tests by suitably utilising the mobile soil testing laboratories should be organised to carry out preliminary analysis and samples found sub-standard may thereafter be subjected to analysis by the conventional methods. (Paragraph 10.16)

Role of the Agricultural Universities

49. It should be possible for Agricultural Universities to develop methods of analysis which are comparatively simple and quick. The Universities should also help in imparting training to the quality control personnel in the methods of drawing and analysing the samples. For this purpose, the new quality control laboratories should preferably be on the campus of the Universities so that the Universities could assist the laboratories in an advisory capacity. (Paragraph 10.17)

Adequacy of the Fertiliser (Control) Order

50. The legal procedure under the Fertiliser (Control) Order for trying offenders should be simplified. Summary trials of offenders should be introduced. The Fertiliser (Control) Order should be amended to provide for penalties on the lines of the procedure in the USA where, as noted by the Committee on Fertilisers, penalties of three times the value of the deficiency were imposed if the product was not upto the declared standard. (Paragraph 10.20)

Quality Control Organisation at the State Level

51. An Officer of the rank of Joint Director of Agriculture should be put in charge of a separate Input Cell which should be set up in each State and be made responsible for taking such steps as are necessary for the maintenance of quality of all inputs including chemicals and fertilisers. (Paragraph 10.24)

Extension Education of Farmers to Identify Quality Fertilisers

52. By making use of publicity media, farmers should be educated with regard to the facilities available for testing of ferti-

lisers and distinguishing the standard material from the spurious ones. The Fertiliser (Control) Order should be translated into local languages and made available to the public.

(Paragraph10.26)

Ensuring Better Quality Through Minimising Number of Products Marketed

53. The number of fertiliser products should be minimised to have better scope for enforcing quality control over them.

(Paragraph 10.27)

INTERIM REPORT

ON

FERTILISER DISTRIBUTION

SECTION-I

INTRODUCTION

1.1. In May, 1971, the Planning Commission made a study of the All-India progress in the matter of fertiliser consumption in recent years. This study notes that fertiliser consumption in the country after showing phenomenal growth in 1966-67 and 1967-68 has been deteriorating and maintaining a level far below the Plan expectations. Fertiliser utilisation is one of the cardinal strategies of agricultural growth. Any serious deterioration in fertiliser consumption will, therefore, lead to substantial adverse effect on the growth of agricultural production in the country. The study tried to analyse the reasons for the fall in growth and has come to the conclusion that some of the main factors are :

(i) lack of extension and sale promotion activities;

(ii) inadequate soil testing facilities;

(iii) unsatisfactory retail distribution arrangements;

(iv) insufficient quality control of fertilisers; and

(v) difficulty in provision of credit to the farmers.

1.2. One of the Terms of Reference given to the National Commission on Agriculture relates to "requirements of new strategy of scientific agriculture in the shape of requisite supplies of inputs and production requisites with special consideration of sources of supply and problems and in particular—

* * * *

(b) propagation of soil nutrients including chemical fertilisers and other organic manures.

* * * *"

1.3. The Planning Commission requested that the National Commission on Agriculture might examine the problem of fertilizer consumption on a priority basis and advise Government through an interim report at an early date what in their view were

the factors restricting the growth. The Commission, therefore, took up this issue as a priority study. Detailed discussions were held with the Governments of the States of Orissa, Maharashtra and Uttar Pradesh in which States the fertiliser consumption had particularly lagged far behind the targetted growth during the Fourth Plan period. The Commission also had detailed discussions with the Governments of the States of Bihar, Gujarat, Haryana, Mysore and Punjab in which States the consumption was satisfactory. The Commission then issued limited questionnaires to all the States in the matter of quality control of fertilisers and also on certain aspects of fertiliser distribution. Questionnaires were also issued to the fertiliser producers about problems of distribution. In Appendix I are given the various questionnaires issued from the Commission on the subject and in Appendix II is given a statement showing the names of organisations etc. who responded to the questionnaires and gave their replies. The Commission also had discussions with representatives of the Ministry of Agriculture, Ministry of Petroleum and Chemicals, Department of Banking, Railway Board, National Cooperative Development Corporation, Central Warehousing Corporation, Fertiliser Corporation of India and various fertiliser producers as well as the Fertiliser Association of India. The Commission had also the benefit of advice on the quality aspect of fertilisers from the Working Group on Fertilisers and Chemicals which was set up to consider the various issues relating thereto.

1.4. The last comprehensive study of fertiliser distribution was by the Committee on Fertilisers appointed by the Ministry of Food and Agriculture in 1964, whose Report was issued in September, 1965. The Committee started its labours at a time when the realisation that fertiliser output was most important for rapid improvement of agricultural production was just getting sufficient attention. Bulk of the fertilisers then consumed in the country was from imports. Indigenous production was very small. A Central Pool organised by the Ministry of Food and Agriculture was handling the bulk of the distribution in the country and the cooperative sector was having a lion's share in this distribution. The Committee on Fertilisers keeping in view the possible rapid growth in Fertiliser production and in fertiliser consumption laid down the directions of development of the fertiliser distribution programme to meet the exigencies of the new situation. Even then, substantial production in the country in the near future was only an expectation.

1.5. The situation has since changed very substantially. Indigenous production of fertilisers is building up rapidly and, by 1975-76, should form the bulk of the fertilisers consumed in the country. The high-yielding varieties of seeds which were just an expectation when the Committee on Fertilisers gave its Report, have justified themselves and their use is now one of the main pillars of our agricultural production programme. These varieties are having their own impact on the economics of fertiliser application and consequent increase in fertiliser demand. The distribution system has been expanded to include the private sector and banking credit has also come in a big way in fertiliser distribution as recommended by the Committee on Fertilisers. The tremendous increase in growth in fertiliser consumption and the growth of so many large production units have led to various distribution problems. The Commission, therefore, felt that most of the aspects of distribution which were looked into by the Committee on Fertilisers would need a second look to see how far the recommendations would still hold good and to what extent modifications and improvements were necessary. This Interim Report deals with, in our view, almost all the important aspects in fertiliser distribution which require immediate attention of the Government and all others concerned.

SECTION II

FERTILISER CONSUMPTION AND DEMAND

Fertiliser Consumption

2.1. The Fourth Five Year Plan has targetted for fertiliser consumption of 5.5 million tonnes plant nutrients in 1973-74. This comprises 3.2 million tonnes of nitrogenous, 1.4 million tonnes of phosphatic and 0.9 million tonnes of potassic fertilisers. The production levels anticipated for that year are, among others, 129 million tonnes of foodgrains, 8 million bales of cotton, 10.5 million tonnes of oil seeds, 15 million tonnes of sugarcane in terms of Gur and 7.4 million bales of jute. The compound annual growth rates in the consumption of fertilisers required to achieve the level of fertiliser application envisaged for 1973-74 work out to 22.8% for N, 29.2% for P_2O and 41.3% for K_2O.

2.2. The study made by the Planning Commission shows that the consumption of fertilisers during the first two years of the Fourth Plan has not kept pace with these targets. During 1969-71, the annual compound growth rates achieved have been 11.1% for N, 8.4% for P_2O_5 and 18.6% for K_2O.

2.3. The Planning Commission study has further pointed out that the fertiliser application in areas under high yielding varieties programme has been lagging behind the recommended dosages envisaged on the eve of the Fourth Plan. According to this study, it appears that the dosages actually applied were slightly more than half the recommended dosages in the case of nitrogen, about 1/5th in the case of P_2O_5 and about 1/4th in the case of K_2O.

2.4. Another disturbing feature noticed in the trend of consumption of fertilisers is that the growth rate during the last few years has shown a declining trend after recording substantial increase in 1967-68. This will be evident from the Table below.

2.5 The low tempo of consumption in 1969-70 and 1970-71 has led to a reappraisal of the requirements of fertilisers. In our examination, we came across an estimate of 3.21 million tonnes of total nutrients for 1973-74 which implied that the

TABLE 1—*Trend of Fertiliser Consumption*

(in lakh tonnes)

	Target				Actual				%age increase over the previous year (NPK)
	N	P	K	Total	N	P	K	Total	
1	2	3	4	5	6	7	8	9	10
1967-68	13.50	5.00	3.00	21.50	10.35	3.35	1.70	15.40	40
1968-69	17.00	6.50	4.50	28.00	12.08	3.82	1.70	17.60	14
1969-70	17.00	6.00	3.00	26.00	13.98	4.35	1.76	20.09	14
1970-71	17.30	5.60	2.50	25.40	14.86	4.62	2.28	21.76	8

trend increase in fertiliser consumption would only be of the order of 16% per annum. As against this, there is yet no cogent exercise to explain why there should be a lowering of the Fourth Plan fertiliser estimates of 5.5 million tonnes. The entire strategy of agricultural production is based on the application of fertilisers. If there is a shortage of fertilisers or a failure to ensure through sufficient promotion the required levels of consumption of fertilisers, the result will be loss in production. It is therefore, evident that a proper authoritative statement of fertiliser required for the agricultural production envisaged must be made by the concerned authorities and this must form the base for both indigenous production and import programmes.

2.6 *Fertiliser Demand* :—The requirements of fertilisers in relation to the forecast of agricultural production have been estimated from time to time. These estimates are given in the Table below.

2.7 The Committee on Fertilisers assessed the requirements of fertilisers in 1970-71 at 2.4 million tonnes of N, 1 million tonnes of P_2O_5 and 0.70 million tonnes of K_2O. The rationale for this estimate was fully explained in paragraphs 2.2 and 2.3 of the Report. The fertiliser requirement was mainly for the high yielding varieties programme and the special programme for improved production of cotton and oilseeds. In the Plan formulations itwas expected that about 32 million acres of land under the high yielding varieties programme if given a fertiliser application per acre of 100 lb. N, 30 lb. P, 30 lb. K for paddy; 100 lb. N, 40 lb. P and 40 lb. K for wheat; 80 lb. N, 40 lb. P and 40 lb. K for maize and jowar and 40 lb. N. for bajra would give an additional yield of 25 million tonnes of foodgrains. On the cash crop side the production anticipated in raw cotton was about 8.6 million bales. A special programme of 5 million acres of groundnut was envisaged to meet the oilseed requirements. The total food production in 1970-71 according to those estimates would have been of the order of 125 million tonnes. As against this the present target for 1973-74 are: 129 million tonnes of foodgrains and 8 million bales of cotton and a special programme of bringing 6.2 million acres under groundnut.

2.8 In the revised Fourth Plan estimates, the target for area under high yielding varieties was put at 62.5 million acres by 1973-74. In estimating the requirements of fertiliser average

TABLE 2—*Agricultural Production and Fertiliser Targets*

(figures in millions)

	Food-grains	Cotton	Jute	Oil seeds	Sugar-cane	N	P	K	Total NPK
	(tonnes)	(Bales)			(tonnes)		(tonnes)		(tonnes)
Draft outline/Working Group on Manures and Fertilisers (1966-71 Plan) .	120.0	8.6	9.0	10.7	13.5	2.0	1.00	0.35	3.35
Fertiliser Committee (Estimates for 1970-71)	125.0	8.6	..	*	..	2.4	1.00	0.70	4.10
Working Group** (1969-74) . . .	..	..	..	..	..	3.73	1.74	1.11	6.58
Annual Plan 1970-71 — Targets . .	106.0	6.5	6.7	9.0	13.2	1.73	0.56	0.25	2.54
Annual Plan 1970-71 — Achievements .	107.8	5.0	4.9	8.7	12.9	1.43	0.46	0.22	2.11
Annual Plan (1971-72)	112.0	6.5	6.4	9.5	13.2	2.0	0.80	0.40	3.20
Fourth Plan (1969-74)	129.0	8.0	7.4	10.5	15.0	3.20	1.40	0.90	5.50

*The Committee on Fertilisers envisaged that the intensive programme under groundnut would cover 5 million acres by 1970-71.

**The Working Group based its estimates on the cropping pattern and the areas to be put under high yielding varieties programme. The coverage of areas under different crops both irrigated and unirrigated with fertilisers and probable rates of N, P_2O_5 and K_2O applications were determined taking into consideration the fertiliser recommendations for different crops.

rates of application of fertilisers were assumed not only for high-yielding varieties but for various crops. Yield expectations were to be at lower levels than what were formulated by the Committee on Fertilisers. The total demand for fertilisers in 1973-74 was then estimated at 6.58 million tonnes of nutrients. On a reappraisal, it was felt that probably the estimates were too modest as regards yield and the fertiliser demand was reduced to 5.5 million tonnes of nutrients but the same levels of crop production were retained. The revised estimates were drawn up on the basis of yield figures obtained in the early part of the high yielding varieties programme. By now, there should be sufficient data available for a suitable reappraisal of yield figures. The Commission has noticed on the basis of a statistical analysis made by the the Directorate of Agriculture in Gujarat of the bajra yield in 1970-71 that the response of the high-yielding varieties of bajra grown in Gujarat appears to be much higher than what was assumed either by the Committee on Fertilisers or the Working Group for the revised Fourth Plan. We have also to note that in 1970-71, with total application of 2.176 million tonnes of nutrients, the production of foodgrains has reached a level of 108 million tonnes. Instead of trying to guess what should be the fertiliser input for achieving the production we expect by 1973-74 the Commission considers it desirable that a special Expert Team should be put on the job of analysing the present production trends, responses to fertilisers and the actual dosages adopted in the field by the farmers and making on the basis of this analysis a fair estimate of the fertiliser requirements that will have to be assured. The requirements will certainly be higher than 4.1 million tonnes of nutrients estimated by the Committee on Fertilisers but whether 5.5 million tonnes will be required or a lower figure will be adequate can be determined only after the exercise is completed. Meanwhile, it is desirable to work towards the target of 5.5 million tonnes.

2.9 If the production programme requires in 1973-74 fertiliser application of the order of 5.5 million tonnes of nutrients an achievement of 2.18 million tonnes of nutrients in 1970-71 and an anticipated consumption of 2.60 million tonnes in 1971-72 as assessed by the Ministry of Agriculture are, in our opinion, quite insufficient. Though the Ministry is carrying out periodical exercises with the State Governments for assessing their requirements of fertilisers, we find in the field that the States themselves are not keeping any watch over the requirements and are changing their demands very frequently and at short notice. A change in the Officer leading the Team may result in a change in the estimate. In States like Bihar, Punjab, Haryana and

Uttar Pradesh, we have received complaints about transport bottlenecks and have been assured that provided fertilisers were moved quickly an aggressive rabi programme could be achieved. But it is not possible, as we are explaining further on, to change the programme of fertiliser availability at short notice. The strategy, therefore, for fertiliser consumption will have to be in the first instance, a proper estimation of our requirements of fertilisers based on the agricultural programme that we want to achieve in each of the years of the Fourth Plan. Having satisfied ourselves about these requirements, a close study of the factors inhibiting the growth of application of fertilisers in any area will have to be done. Steps will then have to be taken by all concerned to ensure that the bottlenecks are removed and an aggressive fertiliser promotion is laid down on the ground and followed meticulously. The solution, in our view, is clearly not to adjust our fertiliser availability to a trend in growth. In a planned economy, the growth has to be forced.

2.10 *Need for Balanced Fertilisers*:—There is an imperative need to promote balanced fertiliser application. The existing situation reflects the preponderance of straight fertiliser application. The analysis of the supplies made by the Central Fertiliser Pool in 1970-71 shows that out of about 1.6 million tonnes of fertilisers supplied, only 17% was in complex form. It is also learnt that when complex fertilisers had been supplied from the Pool earlier, many States were left with sizeable unsold stocks of Diammonium Phosphate. An analysis of the supplies made by the factories during 1969-70 indicates that the share of complex fertilisers in the total despatches was only 13%. In 1970-71 it was marginally higher at 13.6%. The Pool supplies which are based on the requirements of the States and the expected supplies from the factories continue to show heavy reliance on straight fertilisers. Thus, in 1971-72 it is expected that only about 19% of the total Pool supplies will be in the form of complex fertilisers (DAP, ANP, NPK grades).

2.11 It appears, therefore, that the requirements of the States are still not based particularly on soil studies although the States generally agree that such studies are necessary to determine fertiliser requirements. In the method of fixing the targets of consumption of fertilisers, the balanced application of nitrogenous, phosphatic and potassic fertilisers are necessarily to be kept in view as per the recommendations of soil maps, soil tests and field trials. It has been brought to the notice of the Commission that in some States the results of soil studies and the existing soil maps have been considered in formulations. But it appears

that in forecasting annual requirements of fertilisers by States, these factors are yet to be extensively made use of. It seems, therefore, that once the States begin to estimate their requirements of balanced fertilisers on the basis of the formulations, it will be necessary to revise their requirements of phosphatic and potassic fertilisers. This also implies that the targets of fertilisers which were fixed at the time of the initiation of the Fourth Plan will require to be reassessed in the light of the increased application of balanced fertilisers.

2.12 In this connection, it will be interesting to analyse the pattern of consumption of nutrients in selected countries from the point of view of the balance attained in the use of N, P and K:

	RATIO		
	N	P	K
West Germany	0.89	0.75	1
Yugoslavia	2.22	1.31	1
USSR	1.56	0.79	1
Canada	1.70	1.65	1
USA	1.77	1.19	1
Japan	1.30	1.00	1
India	7.45	1.80	1

The ratios have been worked out on the basis of absolute quantities of consumption in 1968-69 mentioned in the statement at Appendix III. The statement above clearly brings out a serious lack of balance in the use of different nutrients in the country and underscores the need for corrective action. We are dealing with the problem of production of balanced fertilisers and their promotion separately in this Report.

SECTION III

FERTILISER PRODUCTION

3.1 Accurate forecast of domestic production has never been possible. The domestic supply from factories has always lagged behind the original estimates of production. This will be apparent from the Table below :—

TABLE 3 —*Fertilisers—Capacity & Production*

Nitrogenous Fertilisers (Lakh tonnes)

Year	Capacity	Production target Original	Revised	Actual Production
1966-67	5.85	4.00	..	3.08
1967-68	8.49	5.20	..	3.67
1968-69	10.24	6.50	5.50	5.43
1969-70	13.44	9.17	8.50	7.16
1970-71	13.44	10.40	8.50	8.30

(Source : Ministry of Petroleum & Chemicals)

Phosphatic Fertilisers

1966-67	2.66	2.00	1.45
1967-68	4.21	2.66	1.94
1968-69	4.21	2.25	2.10
1969-70	4.21	3.10	2.22
1970-71	4.21	3.40	2.25

(Source: Ministry of Petroleum & Chemicals)

3.2 The Table clearly brings out the shortfall in production in relation to the original estimates. In respect of factories producing nitrogenous fertilisers, the shortfall has been between 16% and 30% whereas for factories manufacturing phosphatic fertilisers, it has ranged between 7% and 34%. Even where the targets have been scaled down, the production failed to reach these revised targets.

3.3 It will also appear from the Table that the production has been between 43% and 62% of installed capacity in the case of N and between 46% and 55% in the case of P_2O_5 during 1965-71. The Committee on Fertilisers had on the basis of reliable technical advise based on world experience, expected that production would firm up to 80% of installed capacity in respect of the factories which had gone into production by the end of the Third Plan and 75% of additional capacity created thereafter would be utilised by 1970-71. The actual position in 1970-71 is, therefore, far from satisfactory.

3.4 *Production Programme* :—The Ministry of Petroleum and Chemicals anticipate the following production to be achieved during 1971-74 :—

Production (in lakh tonnes)

	N	P
1971-72	13.20	3.30
1972-73	18.20	4.76
1973-74	21.85	6.71

In view of the shortfall in production in earlier years, the Ministry of Agriculture is inclined to assume a 20% reduction in the production levels in 1972-73 and 1973-74 indicated by the Ministry of Petroleum and Chemicals. According to its assessment, the following production is likely to materialise :—

Production (in lakh tonnes)

	N	P
1971-72	13.20	3.30
1972-73	14.56	3.81
1973-74	17.48	5.37

3.5 We are urging in this Report a substantial step up in the promotion measures to popularise the use of fertilisers on an extensive scale. If the factories in the country continue to perform as at present, imports on a much larger scale will become inevitable with consequent pressure on the limited foreign exchange. We, therefore, strongly recommend that the Ministries of Petroleum and Chemicals and Agriculture should have a close look at the working of these factories and initiate such corrective action as may be necessary to increase the percentage utilisation of indigenous production capacity to the level expected by the Committee on Fertilisers.

3.6 *Inadequate Planning for Phosphates* :—There is a serious lack of balance in the production pattern of the various fertiliser factories in the country. Statistics show that while a capacity for 13.44 lakh tonnes has been created for the production of nitrogenous fertilisers by 1970-71, indigenous capacity available in phosphate production is only 4.21 lakh tonnes. The production of phosphates is lagging behind in the country. This is partly because nearly half of the phosphate capacity is for super-phosphate, a product which is fast losing its popularity due to damage in transit and storage and also to heavy transport cost because of the low nutrient content. At the instance of the Ministry of Petroleum and Chemicals, the Fertiliser Association of India has studied the problem with a view to rationalising these units so that they could produce granulated or other agronomically acceptable fertilisers. The report is understood to be under consideration of the Ministry. We recommend a suitable programme for upgrading the nutrient content of fertilisers issued from the super-phosphate factories.

3.7 The imbalance is particularly discernible in the chain of factories under the Fertiliser Corporation of India in the Northern region. This will be apparent from the statement at Appendix IV. It will be evident from the statement that the entire northern belt, which is going to be the biggest production area for agriculture is covered by the FCI units and the Indian Explosives Ltd.; none of which has any capacity to manufacture phosphates. It has been represented to the Commission that the phosphate producing factories have been located mainly in the shore towns since the raw material has to be imported. However, the Working Group on Fertilisers and Manures set up for the Fourth Plan had emphasised that :—

> "There is need for producing complex/compound fertilisers also along with straight nitrogenous fertilisers at the same plant. If only straight nitrogenous fertilisers are produced at one plant, straight phosphatic fertilisers at another plant and then the two are to be mixed at the third point, it will add appreciably to the cost of plant nutrients as it would involve double handling of material, bagging cost, extra transportation cost, etc. It would, therefore, be better that in future all fertiliser plants produce complex/compound fertilisers of required grades. At these plants provision may also be made for the incorporation of potassic fertilisers without undue increase in the cost of plant nutrients, better products having good physical coditions

and without the problems of segregation, adulteration and possibly less caking."

3.8 This is reiterated. There is a clear need for large additions of phosphate to the programme of the Fertiliser Corporation of India. It seems desirable to have a suitable phosphate plant for the Fertiliser Corporation which will supply the basic phosphatic ingredients for granulated complex formulations in the various units of the Corporation where only nitrogen has been programmed. In view of the foreign exchange constraint, the Committee on Fertilisers had recommended that high priority should be given to the solution of the problem of mining pyrites and making sulphuric acid from indigenous resources. In this context, the Commission feels that it is necessary to speed up arrangements to utilise Saladipura pyrites and Rajasthan rock phosphate so that foreign exchange could be saved to the maximum extent possible. It is understood that the Ministry of Petroleum and Chemicals has a scheme to utilise Rajasthan phosphates. The scheme is yet to be considered. According to this scheme, the Rajasthan complex will have a capacity of 7.16 lakh tonnes of P_2O_5 and will go into production in 1975-76. We strongly recommend that the unit or units for production of basic phosphate nutrients for incorporation in the production of the FCI factories, which now produce only Urea, may be expeditiously constructed, so that the FCI units may be in a position to market suitable complex granulated fertilisers in Northern and Eastern markets as early as possible and in any case not later than 1975-76.

3.9 On the basis of the information supplied by the Ministry of Petroleum and Chemicals, several projects are likely to come up and add to the existing capacity of nitrogenous and phosphatic fertilisers by 1978-79. A detailed statement of the additional capacity and production of nitrogenous and phosphatic fertilisers is at Appendix V. It appears that if all the projects contemplated go into production as anticipated, then by 1978-79 the country will produce 52 lakh tonnes of N, and 21 lakh tonnes of P_2O_5. This means that the ratio between N and P will change from the existing 3.6:1 to 2.5:1. This assumes that the complex utilising, the Rajasthan phosphates will go into production from 1975-76. We cannot overemphasise the need to build the Rajasthan Complex for Phosphate ingredients quickly and bring it into operation not later than 1975-76. It will be evident that although the likely pattern of production will reduce the imbalance between N and P, not enough quantity will be indigenously available to support a

massive programme of balanced fertiliser use. This has its own implications for imports also.

Water Soluble and Citrate Soluble Phosphates

3.10 The Indian farmer is prejudiced against the use of citrate soluble phosphate. The Trombay Unit of the Fertiliser Corporation of India was the first to manufacture Ammonium Nitrate Phosphate with phosphate and partial water solubility or complete citrate solubility. It had to be introduced in competition with super-phosphate and other complex fertilisers which are fully water soluble. The unit had to gather sufficient data to break the prejudice of the farmer against the phosphates other than those fully water soluble. The Commissions is also aware of the controversy about water soluble and citrate soluble phosphates. We propose to analyse the problem after analysis of the results of the trials now being conducted. However, there is a general agreement that 50% water solubility is acceptable and the possibility of doing this in complex fertilisers by the Fertiliser Corporation has been accepted. The present production of its Trombay Unit is 30% of P_2O_5 as water soluble and to expansion plant will have the capacity to produce up to 60% of P_2O_5 as water soluble.

SECTION IV

EXTENSION AND SALE PROMOTION ACTIVITIES

4.1 The main recommendation of the Committee on Fertilisers on this subject was to form a Fertiliser Promotion Corporation to take up fertiliser promotion in the country. For various reasons, this recommendation of the Committee has not been implemented so far. The Commission felt that the recommendations of the Committee on Fertilisers needed a closer look in view of the many developments that are taking place in the promotion field in the country, particularly direct field promotion by the large fertiliser producers. The detailed discussions and recommendations of the Commission on this subject follow.

4.2 Basic extension work in agriculture is being done by the State Departments of Agriculture and Community Development Organisations in the States. Central coordination is attempted by the Ministry of Agriculture. The entire field of agricultural extension is receiving the detailed attention of the Commission; but for the purpose of fertiliser promotion, certain steps are being emphasised in this Report. Fertiliser consumption can expend only where there is a potential for agricultural growth. In all such areas where there is potential, there is already an accepted policy that special extension programmes are to be undertaken. It is as a result of this policy that the Intensive Agricultural District Programmes, the Intensive Agricultural Area Programmes, the High Yielding Varieties Programme, the Multiple-cropping Programme and the Small Farmers Development Agency have been established to intensify extension work and maximise the production possibilities through various agricultural practices including mainly increased balanced fertiliser application. The Commission has specially gone into the problem of the level of technical expertise required in the extension staff in these programmes to ensure successful transfer of technology to the farmer. An interim report on some aspects of Agricultural Research, Extension and Training is dealing with this aspect in some detail. We recommend that from the aspect of fertiliser promotion also, the recommendations made in that interim report on improvement of the technical competence of the exten-

sion organisation require priority attention of the State Governments and the Ministry of Agriculture.

Fertiliser Promotion

4.3 The Commttee on Fertilisers had recommended the formation of a Fertiliser Promotion Corporation to take up, amongst others, the responsibility for a massive promotion programme throughout the country to ensure consumption of large quantities of fertilisers programmed to be made available in future. The Committee also recommended that the Board of Directors of the proposed Corporation should be drawn from all the interests involved in the fertiliser programme *viz*; State Departments of Agriculture, the Universities, the Departments of the Central Government and the Fertiliser Association of India representing the fertiliser industry. This Corporation was to have a local advisory board in each State with the same representation for all interests concerned. It was to have a staff of its own to carry through the programme of demonstrations. This Corporation was also to deal with the import and distribution of fertilisers which was being done by the Central Pool. As explained hereafter, it was not found necessary to have a separate organisation for the import and distribution of the Pool fertilisers. The Corporation would, therefore, have had the sole duty of carrying out fertiliser promotion.

4.4 The Committee had recommended the formation of this Corporation on the ground that though every producer of fertiliser should do his own promotion, a large group of cultivators could not be reached by any producer with his limited resources. It was also felt that a separate technical guidance service organisation entrusted with fertiliser promotion would have to be maintained on a continuous basis because fertiliser recommendations made to the farmer would have to be periodically reviewed by observing results of fertiliser application at the recommended level by conducting soil analysis at regular intervals to determine changes in the nutrient status of the soil. The Committee had identified the requisites of basic promotion of fertiliser use in 1965 as follows—

(a) Practical demonstrations to prove the utility and the economics of fertiliser use.

(b) An efficient and adequate soil analysis organisation.

(c) Promotion of the adoption of the recommended package of practices by the cultivators.

(d) An information service to make adequate use of audio-visual aids in the field for better publicity.

4.5 Since the Committee on Fertilisers submitted its Report, great changes have taken place in the agricultural sector. In 1965, when the Committee considered the question, the concept of the high-yielding varieties of seeds was just emerging and its potential had yet to be assessed. The soil analysis service was also rudimentary. The package of practices approach had been introduced in the Intensive Agricultural Districts Programme and was being translated at that time into the Intensive Agricultural Areas Programmes. It had yet to take root. Since then, the economics of fertiliser use has been established by the large scale adoption of the high-yielding varieties. Soil analysis service has also been expanded though not sufficiently. The package of practices is now the accepted method for all demonstrations and is well understood by the farmer. Contrary to the expectation of the Committee on Fertilisers that the fertiliser producer may not be able to reach any large group of cultivators because of his limited resources, the details given by the various fertiliser producers including the Fertiliser Corporation of India, reveal that they are going in for a massive fertiliser promotion programme They are now convinced that a massive fertiliser promotion programme is the answer for expanding their markets and maintaining them. It is considered desirable to analyse at this stage the present proposals of the Fertiliser Corporation of India and the other fertiliser producers for fertiliser promotion at their expense.

Fertiliser Promotion by the F.C.I.

4.6 The Fertiliser Corporation of India has adopted the following methods of fertiliser promotion in the marketing area :

(i) Fertiliser demonstration in the Farmers' fields.

(ii) Soil testing service.

(iii) Farmers' training programme *e.g.* fertiliser festivals, field days, group discussions and training camps.

(iv) Organisation of technical promotional publicity, *e.g.* :

(a) distribution of crop calendar and product, crop and soil leaflets,

(b) screening of films, film strips and slides,

(c) participation in the rural programme of the All India Radio, and

(d) publication of news letters and press releases timed with different agricultural operations.

4.7 Based on the results of the field trials carried out by the Agricultural Research Centres of the FCI and other Government agencies like the ICAR, the State Departments of Agriculture, etc., fertiliser demonstrations are being laid out by the FCI in cultivators' fields not only to convince the farmers of the utility of fertiliser use but also to acquaint them with important methods of cultivation for maximising returns out of the investments made on fertilisers. For these demonstrations the cultivators are supplied with fertilisers and plant protection materials and other inputs at concessional rates and the dosages are based strictly on soil test results in order to ensure maximum output of crop yields with minimum input investment particularly in fertilisers. The programme of fertiliser demonstration is also supported by a massive programme of soil testing. Fertiliser festivals, field days and group discussions have also been planned on a large scale to involve the farmers in the programmes of farmers' education. The beneficial impact of fertilisers use on increased agricultural production is made known to a large mass of people by organising a technical promotional publicity programme through the radio, press, news letters, films and participation of the technical staff in the rural programme of All India Radio.

4.8 In a recent seminar, the Fertiliser Corporation of India outlined the programme of fertiliser promotion by its factories. The level of expenditure proposed to be incurred by the FCI's factories on fertiliser promotion and the number of demonstrations planned are indicated in the table below :—

TABLE 4—*Expenditure on Fertiliser Promotion*

(Rs. in lakhs)

Area of Demonstration	1971-72	1972-73	1973-74	1974-75
1. Eastern Zone (Bihar, West Bengal, Orissa, Assam, and Madhya Pradesh) . .	79.75	99.19	162.11	151.00
2. Trombay Marketing Zone (Maharashtra, Gujarat, Andhra Pradesh, Kerala and Tamil Nadu . .	37.95	40.22	44.28	44.76
3. U.P. (Marketing Zone of Gorakhpur) . . .	8.67	9.24	10.19	10.57
4. Punjab and Haryana (Marketing Zone of Nangal) .	3.76	3.96	4.28	4.49

TABLE 5.—*Number of trials and demonstrations*

Area of Demonstration	1971-72		1972-72		1973-74		1974-75	
	T	D	T	D	T	D	T	D
1	2	3	4	5	6	7	8	9
1. *Eastern Zone*								
Bihar	504	2,016	736	2,944	1,512	6,048	1,512	6,048
West Bengal	372	1,488	556	2,224	1,116	4,464	1,116	4,464
Orissa	196	784	496	1,984	996	3,984	996	3,984
Assam	216	864	216	864	324	1,296	324	12,96
Madhya Pradesh	120	480	180	720	360	1,440	360	1,440
2. *Trombay Marketing Zone*								
Maharashtra	98	1,603	108	1,763	.119	1,939	119	1,939
Gujarat	30	275	33	302	36	332	36	332
Andhra Pradesh	52	700	57	770	62	847	62	847
Mysore & Kerala	75	850	32	935	90	1,028	90	1,028
Tamil Nadu	19	145	21	160	23	176	23	176
3. *Uttar Pradesh*								
Marketing Zone Gorakhpur	160	640	176	700	192	770	192	770
4. *Nangal Zone*								
Punjab	32	160	36	176	40	192	40	192
Haryana	16	80	18	88	20	96	20	96

T—Trial. D—Demonstration.

Division of Work between State Directorates and FCI :

4.9 The programmes for fertiliser trials and promotional activities are discussed and developed by a technical coordination committee headed by the Director of Agriculture of the State concerned with the specialists such as agronomist, soil chemist, extension specialist, horticulturist, entomologist etc. as members. After the formulation of the programme, the State Directorate circulates it to the staff who thereafter get in touch with the staff of the FCI and assist them in selecting suitable sites, conveying various inputs to the demonstration sites, helping in the organisation of field days, fertiliser festivals, soil testing programmes, etc. These technical coordination committees were constituted by the State Governments of Assam, West Bengal, Bihar, Orissa, Uttar Pradesh and Madhya Pradesh since the inception of fertiliser trials and promotional activities by the FCI. During the past few years, the State Departments of Agriculture have actively participated in the execution of the programme of fertiliser promotion and the coordination committees have been functioning regularly. The committees meet twice a year and plan the entire programme for kharif and rabi seasons on the basis of evaluating the programmes of work and achievements of the previous season. Through these committees, it has been possible to ensure the fullest cooperation and participation of the staff of the State Departments of Agriculture at the Block level for an effective implementation of the programmes. In the States of Punjab and Haryana, the strategy of the FCI has been to support the activities of the State Departments of Agriculture and the Agricultural Universities which have set up a very efficient extension machinery and been instrumental in bringing about the green revolution. The promotional programmes in the current year has been chalked out by the technical coordination committees in all these States. We learn that similar coordination committees are being set up in the States of Maharashtra, Andhra Pradesh, Mysore, Madras, Punjab, Haryana, Jammu & Kashmir and Rajasthan.

Demonstration Technique and Content :

4.10 In all the States covered by the FCI factories, the following types of trials and demonstrations are being conducted :—

Trials :

Type-I . . . . Finding out the norms of fertiliser responses in different agro-climatic regions on

paddy and jute in order to establish the correlation between the soil test values and crop response.

Type-II . . . . . Studying the relative efficiency of different nitrogenous and phosphatic fertilisers in the different agro-climatic regions of the State on paddy.

Demonstrations :

Type-I . . . . . (a) cultivators' usual practice.
(b) Urea+Triple Superphosphate+Muriate of Potash.

Type-II . . . . . (a) cultivators' usual practice.
(b) Suphala.

The levels of application of the nutrients have been adjusted according to the soil test results.

4.11 Half of the total demonstration plot is treated with one of the above fertiliser treatment combinations whereas the remaining half is left to the farmer to follow his own method of cultivation. The size of the demonstration plot is of 1000 sq. metres and on an average 5 such demonstrations per year are conducted in each of the selected blocks. The test crops selected for the proposed demonstrations in different States are as follows :—

Assam :	Paddy, jute, sugarcane and vegetables.
Orissa :	Paddy Jute sugarcane and vegetable
Bihar :	Paddy, maize, potato, sugarcane & vegetables.
West Bengal :	Paddy, jute, sugarcane, wheat & vegetables.
Madhya Pradesh :	Paddy, groundnut and cotton.
Uttar Pradesh :	Sugarcane, potato, paddy, maize and wheat.
Maharashtra :	Cotton, sugarcane, potato, hybrid jowar, paddy, wheat, groundnut, banana, vegetables and spices.
Andhra Pradesh :	Paddy, tobacco, ragi, cotton, sugarcane, jowar, groundnut, banana and spices.
Mysore :	Paddy, jowar, tobacco ragi, groundnut, sugarcane and vegetables.
Gujarat :	Paddy, cotton, jowar, groundnut, wheat and vegetables.
Kerala :	Paddy, groundnut, vegetables & spices.
Tamil Nadu :	Paddy, groundnut, ragi and vegetables.
Haryana :	Paddy, maize, bajra, cotton, potato, wheat and sugarcane.
Punjab :	Paddy, maize, bajra, cotton, potato, wheat and sugarcane.

4.12 Fertilisers and pesticides are supplied at concessional rates to the cultivators and the actual execution of the various field operations is done by the farmer under the close supervision of the field demonstrators. Each field demonstrator is responsible for laying out about 16 demonstrations and 4 trials per year in an area of 2 to 3 continguous blocks, organising one field day and one group discussion per demonstration and collecting 100 soil samples per month. A batch of 3 field demonstrators and one agronomist constitute a team and a number of such teams are supervised by one agronomist, each of whom could cover 4-5 districts in his area of operation. The activities in a State or region are supervised and controlled by a Regional Chief Agronomist and the activities of the zone are in turn controlled by the Chief Agronomist of the zone comprising 4-5 States each. At present 3 such zones have been envisaged : the Eastern Zone comprising the States of Assam, West Bengal, Bihar, Orissa and Madhya Pradesh; the Western Zone of Maharashtra, Gujarat, Andhra Pradesh, Tamil Nadu, Mysore and Kerala and the Northern Zone comprising Eastern Uttar Pradesh, Western Uttar Pradesh, Haryana, Punjab, Rajasthan and Himachal Pradesh.

Fertiliser Promotion by other Fertiliser Factories :

4.13 An analysis of the replies received from some of the fertiliser producers reveals that most of them have some organisational set up to undertake promotional and market development activities. The Fertilisers and Chemicals, Travancore, Ltd; for example, has been having an extensive programme of demonstration to propagate the use of fertilisers. In order to ensure the success of its demonstration programme, care is taken by the factory with regard to (i) selection of plots, (ii) selection of plot owners, (iii) proper maintenance of plots, (iv) publicity aspect and (v) follow up measures. The demonstration programme has been used not only to introduce farmers to the use of fertilisers but also to convince them of the profitability of fertiliser use.

4.14 The EID Parry Ltd; has a net-work of sales representatives, mostly agricultural graduates who are constantly on tour in the villages educating farmers in the correct use of fertilisers and in the adoption of improved package of practices. They are assisted by the technical staff in their head offices. There are also audio-visual units touring the villages, screening educational films and slides and assisting sales representatives in their promotional activities.

4.15 The Indian Explosives Ltd., has divided its market into four areas and Development Officers (all qualified agronomists) attached to each of the four Area Offices organise promotional work in their respective territories. Promotional work in the field consists of demonstrations, field days, seasonal campaigns, audio-visual publicity, etc. and is carried out by sales officers, sales representatives (all agricultural graduates located in each district) and fertiliser demonstrators (3 to 4 in each district) all of whom work under the direct supervision of the Development Officer. Overall guidance for promotional work is provided by a Technical Services Wing manned by specialists in the field of agriculture i.e. agronomists, soil chemists, extension specialists etc.

4.16 The Coromandel Fertilisers Limited has an extensive programme of demonstration particularly in Andhra Pradesh supported by two audio-visual units which tour villages round the year. Similarly, the Shriram Chemical Industries and the D.C.M. Chemical Works have a well organised agronomy section and a promotional wing* which arranges for the laying out of 2000 demonstrations per year in the States covered by their intensive marketing area. The Gujarat State Fertiliser Company Limited has an extensive organisation for promotion of fertilisers. The services are rendered through sales promotion assistants who work at its 150 retail points. More than 1000 demonstrations are organised every year in Gujarat with the object of showing the cultivators the use of balanced fertilisers. The promotion organisation of the Dharamsi Morarji Chemical Company Limited consists of agronomists, field assistants, agricultural development assistants, agricultural finance assistants and sales and marketing staff. The company's demonstrators explain the use of balanced fertilisers along-with its trade brand.

4.17 In view of these vast changes since the Committee on Fertilisers released the Report, the Commission is of the view that a new look should be taken at the proposal for the formation of a Fertiliser Promotion Corporation.

4.18 In the evidence before us, the Fertiliser Corporation of India which will be the most massive producer of fertilisers in the country during the next decade and the other fertiliser producers have agreed that all of them will be carrying out a massive fertiliser promotion programme in their areas of marketing. In their main areas of marketing, they will have a fairly intensive programme of demonstrations, soil analysis and recommendations. The Fertiliser Corporation is having a basic programme of fertiliser trials on various soils for various crops

*Shriram Khad Programme.

to enable its factories to give the latest advice on the proper package for certain soil conditions for certain crops grown in the areas of marketing. All the fertiliser producers are taking the help of the State Directorates of Agriculture and the Agricultural Universities to help them in the formulation of fertiliser routines for various soil conditions for various crops. In areas where they are introducing their fertilisers but which are not important marketing areas for the product, some amount of demonstration is being carried out. This can be taken as the basic pattern that is developing and will be developed in the next few years in the field of fertiliser promotion.

4.19 Keeping in view the fertiliser promotion work which the fertiliser producers will be doing, the Commission is of the view that the Ministry of Agriculture, with the cooperation of the State Governments, should fill up only the gaps in the fertiliser promotion programme in the country. The gaps that we envisage are as follows :—

(a) Areas in the country which are not the main marketing centres of any of the producers of fertilisers;

(b) Areas in the country where more than one fertiliser manufacturer has a marketing operation but it is not massive enough for an effective promotion programme.

In consultation with the various fertiliser producers, these areas should be identified and the fertiliser promotion to be done by the Ministry of Agriculture concentrated in these areas.

4.20 The Commission notes that the Ministry of Agriculture has already decided to take up a departmental fertiliser promotion programme. The main features of the proposal which is being drawn up in consultation with the Planning Commission, I.C.A.R and State Governments for immediate implementation are :—

(i) Demonstrations secondary to National Demonstrations, oriented towards balanced fertilisers to be organised in the selected districts.

(ii) Soil testing laboratories to be made effective and supported where necessary in these districts to give a correct picture of fertiliser requirements.

(iii) Massive publicity through audio-visual media such as radio, films, etc. to support the programme.

(iv) Training of farmers to be organised intensively in cooperation with the farmer training programmes.

(v) Training of V.L.Ws; extension officers, etc.; to be organised on a regular basis every year.

(vi) Training of dealers and cooperative salesmen.

(vii) Assistance in the provision of distribution and production credit-bulk from commercial banks and cooperatives; credit to be given in kind.

4.21 It is proposed to operate the scheme as a part of the Fertiliser Division of the Ministry in full coordination with all other agencies concerned. The scheme will be taken up in 20 districts during 1971-72, 40 districts in each of succeeding years, 1972-73 and 1973-74 totalling to 100 districts during the Fourth Plan period. It is intended to build up a massive demonstration programme in these districts as secondary demonstrations to the National Demonstrations. The number is likely to be of the order of 300 demonstrations per district per year or 150 per season. The cost of each demonstration will be Rs. 200/-. Additional V.L.Ws. and A.E.Os. will have to be provided under the scheme for each district. Incentives for V.L.Ws. who show better promotional activities have also been proposed

4.22 The selection of the districts will be done on the basis of their potentiality in the near future and also the infrastructure already available in these districts with such programmes as National Demonstrations, farmers' training, farm and home unit of All India Radio and intensive crop development programmes. The cost of the scheme is tentatively estimated at Rs. 5 crores for the remaining period of the Fourth Plan. Of this, Rs. 1 crore will be met from Plan funds and the balance from the surpluses from the Pool. The details of the scheme are still being worked out.

4.23 The Commission supports this scheme with the following modification. Areas of operation may be defined as explained in paragraph 4.19. Though funds may be provided from the Ministry of Agriculture, it is desirable that the field organisation works under the control of the State Departments of Agriculture for best effect The programme may be a Centrally-sponsore one.

Central Fertiliser Pool :

4.24 The recommendation of the Committee on Fertilisers to bring under Fertiliser Promotion Corporation the functions

of import of fertilisers, receipt and storage facilities at the port and despatch to the consuming centres which were being performed by the Ministry of Industry and Supply, the Department of Food and the Department of Agriculture severally, was based on the assumption that a single agency would be able to do the work in a coordinated and competent manner better than through different agencies in the context of the effective fertiliser programme envisaged. It was also contemplated by the Committee that when such an agency was appointed, it would also take over the import of potash which was being done by the Indian Potash Supply Agency. The then Ministry of Food and Agriculture had rightly assumed that the formation of a single agency which was not a Government body would not make the work of import, receipt at the port and transport easier without the active support and cooperation of the Ministry of Industry and Supply, and the Departments of Food and Agriculture and the Ministry of Railways. As fertiliser import was anyhow a transitional feature till the internal production was built up, it would probably be easier for the Department of Agriculture to handle the work in the Pool with the functions of Import carried on by the Ministry of Industry and Supply and the port handling by the Department of Food. The arrangement has been working well and there is, therefore, no need to make any change.

4.25 The Indian Potash Supply Agency (now known as Indian Potash Limited) has been handling the import and distribution of Potash quite successfully. Its promotion programme has also been effective. The membership of the Agency has been expanded to allow for a large share to be taken by the cooperatives who are also now in the distribution system for potash. This system is also working well and needs no change at present. For better performance, some adjustments have to be made in the margins on which recommendations are being made in another part of this Report.

Promotion of Balanced Fertiliser :

4.26 Farmers are reluctant to use balanced fertiliser unless it is given to them in complex or mixed fertiliser form. This is because of the difficulty involved in procuring straight fertilisers in adequate quantities and also the lack of knowledge on the part of the farmer to mix them in the recommended proportions so as to ensure the balance required in fertiliser application. It is imperative that steps are taken to promote balanced fertiliser application by making available adequate quantities of complex/

compound fertilisers. Efforts are, therefore, being made to secure the sale of balanced fertilisers increasingly. All fertiliser wholesalers and retailers are now required to stock under the Fertiliser (Control) Order phosphates and potash equivalent to 20 per cent and 10 per cent respectively of nitrogen in stock so that they will feel motivated to sell balanced doses of fertilisers. Such phosphates and potash may be in straight form or in the form of complex/compound fertiliser mixtures.

4.27 The States of Punjab and Haryana have represented that the provision for compulsory stocking of phosphates and potash is not adequate to secure the sale of balanced doses. They have suggested that the Fertiliser (Control) Order should be amended in such a manner that retailers are legally bound not only to stock but also to sell balanced doses according to the local recommendations. An amendment of Fertiliser (Control) Order empowering State Governments to prescribe districtwise and seasonwise minimum sales of P and K along with N is under consideration of the Ministry of Agriculture. We feel, however, that in practice it would be difficult to force a percentage of P and K to be added to all purchases of N because the farmer should not be made to purchase if he does not know in what proportion he has to utilise the straight fertilisers. It will be necessary to popularise these fertilisers on an effective basis before the dealers are asked to compulsorily stock and sell N, P and K.

4.28 The Committee on Fertilisers had assumed that each producer of fertiliser would be interested only in pushing forward his own brand product and he might not be interested in putting across the general message of fertiliser application. During the last few years, with the introduction of the high yielding varieties, the problem of balanced fertiliser application has received prominence. All producers have now realised that whatever their brand of fertiliser, unless they can sell it as a part of a balanced fertiliser programme, they may ultimately lose the market for their brand of fertilisers. Though they have not yet translated this fully in their promotion programme, they all agree that this is essential. The general practice, therefore, has to be established that all producers are to demonstrate the utility of balanced fertilisers of which their brand product comprises one part. A producer who is producing only nitrogenous fertiliser should carry out demonstrations for a balanced fertiliser use of N, P and K. The discussions with the fertiliser companies also reveal that each of them is making its own arrangements for ensuring marketing through its dealers of the nutrients which it does not produce.

SECTION V

SOIL ANALYSIS AND TESTING FACILITIES

SOIL ANALYSIS

5.1 An important development since the Committee on Fertilisers made its report is the realisation that the recommendation of fertiliser application based on soil analysis generally reduces costs without reducing efficiency of production. The results of demonstrations based on soil analysis and fertiliser recommendation which have been received by the Commission show uniformly that the gains are substantial enough to convince the farmer that soil analysis and a balanced fertiliser application based on proper advice, would save him money and, at the same time, ensure a good profit. The fertiliser producers are making this also an important part of their promotion programme. Therefore, all the ingredients of an effective fertiliser promotion programme are already present in the massive programmes of fertiliser promotion which producers of various fertilisers in the country are undertaking. This is a situation different from what was contemplated by the Committee on Fertilisers.

5.2 Carefully prepared fertiliser recommendations based upon accurately conducted soil tests can be extremely valuable in recommending wise investments of money on fertilisers. It has been demonstrated that plots receiving fertilisers on the basis of soil tests give more net profit to the farmer over the plots that are given fertilisers according to the generalised recommendations evolved on the basis of past results of fertiliser trials on research farms and farmers' fields.

5.3 Soil tests have helped the farmers in one or more of the following three ways :

(i) reduce the total cost of fertilisers without affecting the yield and thus increase net profit ;

(ii) apply fertilisers within the same total cost but readjust the proportion of N, P and K on the basis of the level of available nutrients present in the soil and thus increase yields and the net profit ;

(iii) recommend increased total fertilisers at additional cost but at a dose that would result in much higher yields and larger net profit.

Soil testing has also helped in increasing agricultural production. There has been more than 100 per cent increase in rice yields in one year in Stage II villages in Raipur district as a result of judicious and intensive use of fertilisers based on soil testing of individual fields.

5.4 The recommendation for hybrid maize in Rajasthan was 90+60+30 (since changed to 80+45+45). A test of the soil sample from the field showed it to be medium to high in nitrogen, phosphate and potash. As a result of the soil test, the amount of fertiliser used was 60+30+0, resulting in a saving of 13.5 Kg. (30 lbs. per acre) each of N, P_2O_5 and K_2O. In spite of the decrease in the fertiliser applied, maize yields in the field plots in Udaipur were identical to those obtained with the general state recommendations. Since 100 kg less fertiliser per hectare was used, the profit was more by Rs. 125 per hectare*.

5.5 Soil test data and research on fertiliser response are extremely valuable for the farmer in the judicious use of fertilisers. The simple fertility trials during rabi 1970-71 in Sambalpur District provide an interesting example. Soil analysis was made before trials were undertaken. Based on the data in respect of 20 out of 24 trials, it was possible to predict ahead of time the returns from phosphate fertilisation in respect of 14 soils. It was found that 7 soils were responsive and 7 soils were non-responsive. In the case of soils below critical level for P_2O_5, the profit per hectare was Rs. 472 whereas for soils above critical level for P_2O_5, there was a loss of Rs. 4. In so far as returns from potash fertilisation are concerned, the profit per hectare in respect of 2 soils below critical level for K_2O was Rs. 995 per hectare whereas for 20 soils above critical level of K_2O it was only Rs. 197 as shown below :

TABLE : *Simple Fertility Trials*

Sambalpur District — Irrigated rice: Rabi 1970-71

A. Returns from phosphate fertilisation

(Application : 100Kg/ha)	Profit/ha. Rs.
Soils below critical level for P_2O_5 (7 soils)	472
Soils above critical level for P_2O_5 (7 soils)	(—) 4

* 'Soil Science' —J.S. Kanwar and N.P. Dutta.

B. Returns from Potash fertilisation.

(Application : 60 Kg/ha)

	Profit/ha.
	Rs.
Soils below critical level for K_2O (2 soils)	995
Soils above critical level for K_2O (20 soils)	197

These results show that if the fertilisers were applied on the basis of blanket recommendations, there would have been losses or insufficient gain on certain soils. The results highlight the need for detailed soil status studies for determining the requirements of fertilisers.

Government soil testing facilities :

5.6 By 1961, 24 soil testing laboratories had been established in the country. These laboratories were relatively small, capable of analysing 10,000 samples per year. Five of these laboratories were later strengthened under the Intensive Agricultural District Programme to a capacity of 30,000 samples per year. The total capacity of soil testing laboratories available in 1967 was 6.7 lakh samples per year. Since a number of these units had just started fuctioning and a few others were functioning under certain limitations, the number of samples actually handled in 1967 was only about 3 lakhs. Since then the number of laboratories as well as the capacity have gone up. In 1970-71 there were 123 soil testing laboratories run by the States and Union Territories and agricultural universities and cooperatives with a total capacity of 17.26 lakh samples per year. Although the number of samples analysed has increased from year to year, the Planning Commission study shows that only 62% of the total capacity was utilised in 1970-71. It is noticed from the study that the utilisation of the capacity varied from State to State. While in the States of Gujarat, Madhya Pradesh, Mysore, Rajasthan, Punjab and Tamil Nadu, the utilisation of the existing capacity has been above 70%, the utilisation in Bihar has been only 30%, in U.P. 39%, in Andhra Pradesh 47% and in Orissa 49%. In the Union Territories taken as a whole, only 38% of the capacity was utilised. The Statewise details are given in Appendix VI.

5.7 According to the Planning Commission study, several reasons have been advanced for the inadequate utilisation of the soil testing facilities in the States. These are :

(i) adequate number of samples were not received by the laboratories from the field ;

(ii) some laboratories were not adequately equipped to analyse potassic nutrients ;

(iii) a few States carrying out soil testing programmes had no concrete aim.

The study has highlighted that some of the State Governments have drawn up a systematic soil analysis programme for preparing block and village soil analysis fertility maps. It has also referred to the need for research on proper sampling and analytical techniques and interpretation of soil test data for different soil-crop-climatic conditions.

5.8 In addition to the laboratories set up in the States, the Ministry of Agriculture has a programme to provide supplemental soil test facilities at block levels. The scheme of soil test kits was initiated in 1969. But about two years time was taken in procedural matters relating to licensing, getting clearance from the Planning Commission and inviting tenders etc. and it was only in March 1971 that 200 units of soil-water-plant test kits were received by the Ministry of Agriculture for delivery to the State Governments.

5.9 Another scheme for mobile soil testing laboratories was initiated in 1968 by the Ministry of Agriculture for fabrication of 34 such units. But again due to various procedural delays and the unsatisfactory performance by the fabricator only 12 units have so far become available. Twenty two more mobile soil testing laboratories are still to be fabricated.

5.10 We have been informed by the Ministry of Agriculture that in the light of this experience and the rapidly growing demand for soil testing facilities from farmers in the districts selected for Intensive Agricultural Area Programme including high yielding varieities programmes, it has been considered necessary to establish 25 new soil testing laboratories throughout the country and to strengthen 14 of the existing standard soil testing laboratories to the capacity of 30,000 samples per year. Details of this programme are given in the statement at Appendix VII.

Soil Analysis Programme of the F.C.I. :

5.11 The Fertiliser Corporation of India has launched a massive programme of soil testing. Static soil testing laboratories have been set up at Kamrup in Assam, Durgapur and Siliguri in West Bengal, Sindri and Barauni in Bihar, Talcher in Orissa, Gorakhpur in Uttar Pradesh, Trombay, Kolhapur and

Amraoti in Maharashtra and Mangalagiri and Ramagundam in Andhra Pradesh. Besides the static soil testing laboratories, a number of mobile soil testing vans are also being used. These vans are fitted with all the modern apparatus and equipments needed for soil testing and move from village to village. The mobile units which have a capacity to analyse more than 100 samples a day tour different parts of the country almost throughout the year and recommend correct dosage of fertiliser based on soil analysis data. The mobile soil testing laboratories have been found very effective, among others, in achieving the following :—

(i) The method of collection of soil samples for anlaysis is demonstrated on the spot.

(ii) Recommending fertiliser dosage on the spot is also more accurate since minor adjustments in the recommendation are possible.

(iii) Expenses of sending soil samples to static laboratories as well as the delay in processing are eliminated.

(iv) With a planned programme, a mobile van can cover more areas very intensively.

(v) The units serve the purpose of audio-visual vans and help to initiate group discussion and meetings on the spot.

A team of four junior chemists, two helpers and one soil chemist responsible for the overall functioning of a static/mobile soil testing laboratory and the entire soil testing programme of a State including soil test—crop response correlation studies and micronutrient studies is supervised and controlled by a Chief Soil Chemists.

5.12 The details with regard to FCI's programme of soil analysis in its different zones are given in Appendix VIII. It will be seen that the soil testing capacity of the FCI units will have increased from 8.45 lakh samples in 1971-72 to 17.10 lakh samples in 1973-74.

Soil Analysis Facilities of other Fertilisers Companies :

5.13 So far as the fertiliser companies other than FCI factories are concerned, except for the FACT, the E.I.D. Parry, the Madras Fertiliser Ltd; Indian Explosives Limited and the Dharamsi Morarji Chemical Company Ltd; the others do not have soil testing laboratories as yet. The F.A.C.T. has a well equipped soil testing laboratory for analysing a minimum 10 thousand samples a year.

A second soil testing laboratory with a capacity of analysing 10,000 samples is nearing completion at Trichy in Tamil Nadu. In addition to these two units, it has a mobile soil testing labortory with a capacity of 15,000 samples to cater the requirements of Mysore and Andhra Pradesh. The soil samples are collected from the farmers' fields by the factory's field staff and sent to the laboratory for analysis. Collection, analysis and communication of recommendations to the farmers are done free of charge. In addition, sales officers are provided with soil testing kits which could be used when a detailed soil analysis is not required. The sales officers have been trained to undertake on the spot soil analysis as a free service to the farmers.

5.14 The E.I.D. Parry Limited has set up three soil testing laboratories and the sales representatives, who are agricultural graduates, collect soil samples and send them for analysis to any of these three laboratories. A Soil Scientists/Agronomist at the head office of the factory indicates the fertiliser recommendations based on the soil test results for being followed up by the sales representatives on the field.

5.15 The Madras Fertilisers Limited has a central soil testing laboratory at Madras which services its entire marketing area. This laboratory is equipped with sophisticated instruments for soil analysis and has a current capacity of 100 to 120 soil samples per day. The service is extended to farmers through the factory's dealers who are trained systematically in the procedure of collection and despatch of soil samples. The soil test recommendations are made as recommended and approved by the State Departments of Agriculture. Farmers are required to pay for the Postage of sending the soil samples to the soil testing laboratories. The analysis is done free. The test results and the recommendations are communicated directy to the farmers with one copy to the dealer concerned and another to the fertiliser salesman in-charge of the area.

5.16 The Indian Explosives Ltd. has a soil testing laboratory at Kanpur with a planned capacity of 30,000 soil samples a year under a Technical Manager attached to its plant at Panki. The soil samples are collected by the factory's sales representatives, who are agricultural graduates, from demonstration plots and sent to the soil testing laboratory. The soil testing results are thereafter transmitted to the Soil Chemist attached to the technical service wing of the marketing department who, thereafter, formulates the recommendation in consultation with the Agronomist. In extending the service to the farmers, the Company has start-

ed training its dealers in the correct methods of soil sampling so as to utilise its dealer network for collection of soil samples.

5.17 The Dharamsi Morarji Chemical Company Ltd; has a fully equipped soil testing laboratory in charge of Soil Fertility Adviser.

5.18 Though a lot of development has taken place in the provision of soil analysis service, the Commission feels that much more will have to be done to ensure that fertiliser application is based on proper soil analysis. Expansion of soil analysis services in the States not only in the areas where the fertiliser promotion will be done by the Department but also in the areas where the fertiliser companies will be doing their promotion but the services are irregular may be organised by the Ministry of Agriculture as a Centrally sponsored programme.

5.19 The Commission is also of the view that except Fertiliser Corporation and a few fertiliser companies, the fertiliser producers are yet to organise their soil analysis service on an adequate scale. The producers should intensify their soil analysis service in the interest of promoting large-scale adoption of balanced fertiliser application based on systematic programmes of soil analysis. We would recommend that the factories draw up their soil analysis programme ultimately on the pattern adopted by the Fertiliser Corporation of India.

SECTION—VI

ARRANGEMENT FOR RETAIL DISTRIBUTION STORAGE

6.1 The Committee on Fertilisers had specially recommended that private retailers should be brought increasingly into the fertiliser distribution complex in view of the rapid expansion foreseen in the volume of fertiliser for distribution. The policy has been accepted and as a result it is noticed that there is an increase every year in the number of retailers handling the distribution. The Statement at Appendix IX corroborates this. Whereas this situation can be taken as satisfactory, it is noticed that the number of cooperative retail depots has sharply declined in recent years particularly in some States as is apparent from the details in Appendix X. The coopertive system has certain built-in facilities for ensuring distribution of fertilisers all over the country. Special steps were taken to build storage godowns in the cooperative sector with quite an amount of subsidy from Government to ensure that fertiliser marketing in interior areas could be carried on smoothly. Growth of irrigation has led to increased production potential in many areas in the country, which are even now far away from the railheads and are difficult areas for transport. Policy in the Central Pool and in the cooperative plan was directed towards enabling the cooperative structure to serve these areas quickly. Viewed against these expectations, the sharp fall in the number of cooperative retail depots is particular alarming. In addition, during the disscusions at various levels, the Commission heard the repeated complaint that the private retailer was interested only in distribution near railheads so as to appropriate as much of the distributors margin as possible as profits, leaving interior areas unserved. The pressure on the cooperative system to serve the interior areas has, therefore, grown whereas the system is failing to respond. The Commission has examined this problem in some detail. Broadly, both in the case of private retailers and cooperatives, the distribution margins particularly those for transport and storage adopted by the fertiliser producers did not appear to be fair enough to allow for honest business in the interior areas. We have explained these problems in great detail and suggested remedies which we hope will be accepted by all concerned. We have also suggested that

the Pool, whilst its finances permit, should continue its policy of helping to organise the cooperative structure to deal with fertiliser distribution effectively, particularly in the interior areas of the country. We hope that these recommendations would also be accepted.

Newly Developing pattern of Distribution

6.2 The Government of India had a scheme of allowing off-season rebate to the cooperative wholesalers as an incentive for purchases in advance of the showing season. According to this scheme, the rebate had to be passed on to the level of the farmer who made advance purchases in off-season. The underlying idea was that it would ease the problem of delays and bottlenecks in the movement while at the same time ensure timely supply of fertilisers. The Working Group on Manures and Fertilisers set up for the original Fourth Plan (1966-71) endorsed this idea and commented as follows :

> "It would be necessary to ensure that the off-season rebate is passed on by the States to the distributing agencies to attract them to order for supplies well in advance in general and during the non-manuring season in particular. For this purpose the States will have to devise proper procedures to pass on off-season rebate speedily to the agency that actually holds the stock".

The Committee on Fertilisers also considered this matter and observed :

> "The problem of non-availability of fertilisers in time in advance of the season is partly due to the tendency of distributing agencies to save on interest and godown charges by not indenting the fertilisers in advance of the season. For ensuring timely supplies for seasonal application of fetilisers, distributors will have to be permitted to hold adequate stocks amounting to at least half of the seasonal requirements as off-season storage in advance of the season".

In actual practice, the rebate was not passed on by the State Marketing Federations to the lower level societies and ultimately to the farmers. The Government of India withdrew this scheme with effect from 17-4-1970. The present position is that the farmer

is reluctant to buy in advance. His tendency is to indent for fertilisers when the sowing starts. In view of what has been said above, it is also understandable that the cooperative dealers at the retail level are also reluctant to stock in advance even if off-season rebates are granted by the Government. Replies received from the producers of fertilisers indicate that they do not give off-season rebate to their dealers for stocking in advance of the requirements. The Trombay Unit of the Fertilisers Corporation of India is of the view that producers should give rebate in the off-season to cover the interest during the period but not distribution credit, which should be taken over by the banks. As it is, the producers offer distribution credit to their dealer.

6.3 The Committee on Fertilisers contemplated a distribution system where stocks would move out of the factories and the Pool regularly and would be stored by wholesalers in the consuming markets. The retailers were to take their supplies from the wholesalers and also store the same for some time. The factories and the Pool were to give a credit of two months to the wholesalers and the interest charges were to be absorbed in the price of the fertiliser. Four months' interest charges at 8% per annum were provided in the margin for the disposal of the the fertilisers to the farmer. A storage charge for six months was also provided which was to be divided between the wholesaler and the retailer. Handling charges were allowed at the stage of wholesaler and retailer. The Committee also recommended an off season rebate to the dealers and the farmers for taking fertilisers in the off-season so as to maintain a smooth flow of stocks from the factory and the Pool to the consuming centres. In actual practice it is found, as explained in the previous paragraph, that many of the assumptions about the behaviour of the fertiliser market have not been found to be correct. The margins provided by the Committee were based on the rates prevalent in 1965. There has been a rise in the rates in several items comprising the margins.

Responsibility for Storage

6.4 It is the uniform experience of all the fertiliser distributors that the farmer will not purchase his fertiliser in advance and expects to have the supplies just when he wants it, before the cultivation season. In areas dependent on rainfall, if the rainfall is satisfactory, he rushes for his fertiliser supply. If the rainfall is insufficient, he does not invest in fertilisers. As

a result, the retailers also do not like to hold on to stock for any length of time and only indent for stock just before the consumption season. Wholesalers, who are not distributors of the factories with agreements to lift fertilisers according to a time schedule, also opt for supplies just before the retail demand builds up. So contrary to the expectation of the Committee on Fertilisers that fertilisers can move from the factories and the wholesalers throughout the year to the wholesalers and retailers, provided an off-sesaon incentive is given, it moves to this class of distributor only before the cultivation season. The result of this changing pattern is that storage has to be substantially at the risk and expenditure of the factory or the main distributor.

6.5 Once it is agreed that the bulk of the storage is to be on the factory or the main distributor, stocks have to move from these storages to the consuming centres almost straight. The Committee on Fertilisers contemplated a wholesaler's storage and a retailer's storage point. Instead, it is enough if there is only one recognised storage point from the factory storage or the main distributor storage to the farmer. In our discussions with the fertiliser factories, it was agreed that this would be sufficient. In the case of retailers who indent wagon loads of fertilisers (or where truck transport is availed of a truck load) the stocks should move directly from the factoty storage or main distributor storage to the retailer's storage point in the consuming centre. In the case of retailers who take lessor quantities and indent through wholesaler intermediaries, the storage point has to be at the wholesale level. In these cases, the stocks will move in wagon loads or truck loads to the wholesaler godown and from there to the retailer in small lots. The retailer need not in such cases maintain any elaborate storage and can be given only a nominal storage charge per tonne.

Intermediate Storage of Factory Supplies

6.6 Detailed discussions have been held by the Commission with the fertiliser producers and the Pool authorities about the present pattern of consumption that is developing in fertilisers in the country. The Pool has certain difficulties in smooth import of stocks and shipping which are dealt with separately. As a result, the problems of the Pool as regards stocking and storage are quite different from the problems of the fertiliser producers in the country. We are also dealing with this

problem separately. All the producers agree that, by now, they have developed marketing areas for their product which generally allows them to take two season fertiliser demand during the year along with an all the year round demand in sugarcane and plantation crops which allows for a regular off-take almost throughout the year though in small quantities. As a result, they are able to market their production every month almost straight to the consuming centres except for the months of March, April and May. The problem of intermediate storage, therefore, arises only for stocks during these months and occasionally for stocks in the rabi season for a month or so except where the railway movement and unusual seasonal factors create blocks here and there. Based on this experience, the producers have agreed that a three months' storage at intermediate storage point along with a provision for a three months' storage at the wholesaler or retailer storage point shall make the system work smoothly. We agree with this appraisal of the distribution problem of the producers and recommend that the producers should, in addition to their silo storage at the factory, provide on the average three months' storage at the consuming centres at intermediate storage points. These storages will also come in handy to deal with railway transport problems where full rake or half rake movements have to be organised to facilitate long distance railway haulage. An additional provision of three months storage by the wholesaler or retailer, whoever maintains the retail level storage point, shall be sufficient.

6.7 During the discussions, the Commission noticed that there was some intention to treat silo storage at the factory as part of the intermediate storage system. Silo storage shall be a standby for production breaks so that supplies to the consumer may not be held up by occasional production breaks or maintenance breaks. Silo storage shall also act as a buffer to hold up production stocks where railway allocations are not smooth and daily production cannot be moved out to demand points automatically. Normally, 6 weeks' storage is provided in silos at the factory. The cost of this storage is normally to be treated as part of production costs and not of distribution costs. This storage shall not be confused with the intermediate storage that has been recommended. We agree that a 6 weeks' storage in silos in a reasonable provision for operational hold up and railway movement hold up.

6.8 We examined in some depth the problem as to who shall maintain the intermediate storage. In some States, inter-State sales tax is levied on fertiliser movement from the factories to the depots in other States if there is transfer of ownership along with the transport. Such a tax is as much as 3% and will be a substantial addition to the distribution costs if it is paid in addition to the local sales tax which should be paid on the local sale. This also puts a factory located in a different State at a disadvantage *vis-a-vis* the factory in the State of consumption. Producers will like to avoid this charge if it is possible by maintaining the storage on the factory account and treat movement to storage as a factory movement. This should not create any difficulty except that a main distributor of the factory will then handle only the sale from the intermediate storage to the local dealers and will have no part to play in the storage. This also should not cause any difficulty except in the case when the main distributor is a cooperative institution.

6.9 The producers are now hiring godowns of using the godowns of the Central Warehousing Corporation and the State Warehousing Corporations to have the intermediate storages in the areas of consumption. Substantial use is being made of the facilities of the Warehousing Corporations. The Commission has noticed that the charges levied by the Warehousing Corporations for storage of fertilisers are as much as Rs. 2.40 per tonne per month and there is also a proposal to raise this charge. During the evidence before us, some of the fertiliser producers mentioned that the Warehousing Corporations were seeking long term booking of space. Some others, on the other hand, maintained that shorter period storage was possible. We have checked up with the Central Warehousing Corporation that advance booking is allowed for a minimum period of reservation of three months at a time. This should normally be beneficial to the fertiliser producers who require intermediate storage and who do not want to have their own storages. In fact, storage accommodation built by the producers themselves may cost them on the average much higher per tonne because of non-utilisation of space for a good part of the year. We have recommended on average storage charge of Rs. 1.50 per tonne per month in the margins, which we feel will be sufficient as an average rate for the various types of storages that may be contemplated.

6.10 If the producers have to hold their own stocks in the intermediate storage for an average of 3 months, they will have

to get the necessary bank credit for the holding of the stocks and for the interest charges. There have been various restrictions in giving credit to the producers if it is for holding of fertiliser stocks. As the three months' holding is a necessary part of the fertiliser distribution system, the required loan accommodation must be forthcoming to the producers at reasonable margins and reasonable interest rates. Without this facility, the entire distribution chain will break and cause disruption. We have drawn the attention of the Banking Department to this most immediate problem and we understand that it will be most sympathetically dealt with. We are firmly of the view that this problem must be solved.

6.11 Where the cooperatives undertake the distribution for the producers, it is possible for them to act as their storage agents for intermediate storage. The cooperative system had, at the end of 1969-70, a storage capacity for 1.21 million tonnes at the mandi level. They had also a hired capacity at mandi level of 0.60 million tonnes. In the Plan programme, there is a provision for building more buffer stock godowns. A substantial part of this storage, in our view, can be utilised for fertiliser storage. It is estimated that at present 75% of the capacity is utilised by the cooperatives for the storage of fertilisers. The cooperatives obviously cannot takeover the stocks from the factory to their storage on their account. They will then have to pay the inter-State sales tax. It, therefore, appear advisable to devide the agreement between the producer and the cooperatives so that the producer is reckoned as a storage agency and the cooperatives a distribution agency treating the sales from the intermediate storage as sales from the factory to the wholesaler or retailer whoever is transferring the stocks to this local storage. This should solve the problem of additionality of sales tax.

6.12 In our discussions with the Fertiliser Corporation of India and other fertiliser producers, we have been told that the producers would like to avail of the facilities with the cooperative sector on a much larger scale if these are provided at the right places and on reasonable terms. The Fertiliser Corporation has also suggested that they will study the net-work of storage facilities of the cooperative sector and see how far these will be convenient locations for maintaining intermediate storage as suggested in this Report. We would strongly recommend that the National Cooperative Development Corporation should

negotiate with the Fertiliser Corporation and the other producers in regard to the Utilisation of the storage capacity available with the cooperatives, the terms and conditions and the services required by the industry for purposes of intermediate storage. The National Cooperative Development Corporation should on the basis of the discussions with the producers be agreeable to put up additional storage godowns at locations where these are wanted. We feel that such a rational scheme of storage godowns should be taken up immediately by the National Cooperative Development Corporation. This would ensure a much greater utilisation of the cooperative storage facilities by the producers while at the same time facilitate distribution on the pattern envisaged by us.

Difficulties in importing

6.13 It is complained that stocks are not being received from ports and fertiliser factories in the consuming areas in the States regularly and according to the indents. In view of the lag with which the fertilisers are received at the consumer points, the Commission has considered the question of adjusting imports in a manner that will ensure timely supplies of fertilisers. It has been suggested that if the imports are arranged in the off-season, it will considerably facilitate supplies to the consuming areas.

6.14 It has been represented to the Commission that the requirements of fertilisers for the Pool vary according to the stocks carried forward from the preceding agricultural season and the ups and downs of the indigenous production. In view of this uncertainty and the difficulties in arranging imports, the scheduling of imports in the months preceding kharif and rabi is not considered feasible. The Ministry of Agriculture has explained this as follows :

> Upto 1969-70, the import programmes were drawn up about 6 to 8 months in advance. The targets of consumption of nitrogenous, phosphatic and potassic fertilisers as indicated by the States for the following years were assessed as well as the likely indigenous production. The difference was sought to be met by imports, without going into the question of the actual opening and the desirable closing stocks. This worked very well in the years when there was scarcity of fertilisers as

there was hardly any stock with the Pool and the States were willing to hold the stocks for long periods. The situation changed in early 1969, when relatively large stocks were accumulated by the States—6.91 lakh tonnes of N and 2.84 lakh tonnes of K_2O as on 1-4-69. Domestic production had also picked up. As against a 40% increase in the consumption of fertilisers in 1966-67 and 1967-58, the increase in consumption came down to 14% in 1968-69. The States, thereafter, hesitated to lift the huge stocks which they had indented and the Pool had imported. As a result, the Department undertook more detailed planning and the requirements were discussed with the States in the zonal conferences twice a year, once on the eve of kharif and again on the eve of rabi. During these conferences, detailed product-wise programmes were drawn up State by State and a joint supply programme was prepared with the manufacturers having marketing zones in these States. The import programme was thereafter finalised by an inter-departmental Committee consisting of representatives of the Ministries of Agriculture, Petroleum and Chemicals, and Finance and the Planning Commission with Agriculture Secretary as Chairman. As a result of the introduction of this system, forecasts of demand were initially made for the next two seasons only requiring procurement at short notice. The Department of Supply took the position that the Ministry of Agriculture was asking for supplies at too short a notice and often the supplies had to be procured at high prices from countries like USA and Canadna when their domestic agricultural season was in full swing The following constraints called for a longer lead time for fertiliser imports and for spreading them over the whole of the year rather than immediately before the consumption season :—

—Requirements for long term foreign exchange planning;

—Import from all countries in their off-season;

—Necessity of chartering vessels at the cheapest possible freight;

—The limited unloading facilities available at the Indian ports and the need to avoid monsoon months;

—The convenience of the Railway for organising wagon movement to interior points;

—Possibility of unexpected holdup *e.g.* production bottlenecks of the exporters, strikes at the port of loading/unloading etc.

In view of these limitations, it appears difficult to bunch imports during the off-season.

Storage of Pool Supplies

6.15 We have analysed in the preceding paragraph the various difficulties that face the Central Fertiliser Pool in organising imports on any regular basis throughout the year. Not only this, to avail of the cheapest market in foreign countries, imports have to be phased for the off-season in those countries. If the freight charges for shipping transport are to be minimised, transport has to be arranged when the shipping at favourable rates is available. All this bunches arrivals without relevance to the requirements of the crop season in the country. If to this are added the difficulties at ports and the need to avoid monsoon months, we fully sympathise with the Pool authorities in their problems of minimising import costs and organising regular supplies to the various consumers in the States.

6.16 The Ministry of Agriculture in its evidence before us has stated that in view of these difficulties it has to provide for the stocking of all the kharif requirements by 1st April of the year and of all the rabi requirements by 1st October. In the consumption pattern that has developed so far, the kharif accounts for seven-twelfths of the annual consumption and the rabi five-twelfths. This necessitates a storage capacity under the control of the Central Pool which will enable storage of upto five months' requirements of stocks on 1st April and similarly four months' stocks on 1st October. The additional two

months' supplies in kharif and a month's supplies in rabi can trickle in by imports during April, May and June and in November and December. In addition, in view of the need to enter into import commitments long in advance of the seasons and the possible changes in demand over the year, it may so happen that there may be shortages during the year because demand has risen or there may be surplus stocks in hand because demand has fallen. As the Pool is the machinery that is being used to ensure that all the fertiliser requirements of the cultivators are met according to demand, in our opinion, it should rightly take the risk of carry over of the stocks and also indent slightly more than the assessed demand. We can put this extra requirements at another month's stocks with the Pool. The States will also have to take some responsibility for dealing with these changes in demand because, to a large extent, it is only by active interest of the States demands can be built up and stocks disposed of. The Fertiliser Pool is, therefore, requiring the States to take the responsibility for maintaining certain amount of buffer stocks. The States should take responsibility for maintenance of at least one month's stocks, if the season and stocks so require.

6.17 The distributors for the Pool fertilisers are normally the cooperatives in the States. Therefore, it is reasonable to expect that the storage available to the cooperatives will be utilised for maintenance of these stocks till the consumption arises. Even so, the Pool must be able to have some firm buffer stocks storage of its own. Because of heavy holdups in 1968-69, the Pool had to hold on to as much as nine months' stocks by organising a lot of temporary storage. At present, the Fertiliser Division in the Ministry of Agriculture is carrying on periodical discussions with the States and assessing fertiliser consumption trends for two years in advance. Imports are being organised on this basis. It should be possible to work out a reasonable stock holding on the following pattern :—

(*a*) Port storage to be organised by the Pool for at least 1½ months' receipts at port. This is to allow for railway transport difficulties from port and bunching of ships.

(*b*) Good storage for at least 5 lakhs tonnes of fertilisers (two months' stocks) in bags to be provided by the Pool at suitable intermediate storage points.

(*c*) Buffer stock storage for at least one month's Pool stocks (2½ lakh tonnes) to be provided by the States on the basis of their receipt pattern from the Pool.

(*d*) Good intermediate storage to be provided by the co-operative sector at marketing society level for three months' Pool stocks (7½ lakh tonnes).

(*e*) Storage to be provided at primary cooperative level for one month's stocks of the Pool (2½ lakh tonnes).

All this, if suitably planned, will allow holding-up, at one time, of 8½ months' Pool stocks. This will give sufficient elbow-room for carry-overs and bunching of imports. Normally it will allow for the distribution pattern that is developing as is explained in paragraphs 6.2 to 6.5.

6.18 Port storage for 1½ months' stocks is now possible in view of the fact that food imports have gone down and godowns formerly used for food imports will now be available for fertilisers. The Committee on Fertilisers had suggested that the Government of India should undertake a phased programme for the construction through Government agencies of about 200 buffer godowns for fertilisers with a capacity of about 10,000 tonnes each during the original Fourth Plan (1966-71). Two million tonnes storage will not be required now. We suggest the necessity for the Pool to have at least 5 lakh tonnes of good intermediate storage for stock operations at convenient centres. Now that the Pool has got some surplus funds, we recommend that a phased annual investment may be made in locating godowns of suitable capacity at convenient intermediate storage points to build 5 lakh tonnes storage at least by the end of 1973-74. At present, the Pool is making use of the Warehousing Corporations' storage accommodation for storing fertilisers. Costs are rather heavy in the Warehousing Corporations because the purpose of the Corporations is to help holding of stocks of agricultural commodities and not fertilisers. It will be economical for the Pool to have control of its own godowns for 5 lakh tonnes.

6.19 We have recommended that the States should also have buffer stock accommodation for one month's stocks by 1973-74 which will be equivalent to roughly 2½ lakh tonnes. The States can organise the storage through the Agro-Industries Corporation or some similar venture.

6.20 In the Report of the Study Team of the National Co-operative Development Corporation on Fertiliser Distribution Margins, an analysis of the programme of storage construction by the cooperatives has been made. In the programme originally sponsored by the State Governments in their Plans,

assistance of 62½% of the cost of godown was provided as loan to the cooperatives and the balance of 37½% as subsidy. The scheme worked till 1968-69. The National Cooperative Development Corporation provides 50% of the cost as loan and 25% cost as subsidy and this is the pattern which is now prevalent. Attempts were made to get financing through Agricultural Refinance Corporation and the banking sector. It is found that the banks have been asking for 50% margin and so also the Agricultural Refinancing Corporation who refinances the loan of the banks. The programmes are limited by availability of funds in the States' plans and in the National Cooperative Development Corporation. Though we have recommended that the Pool should put up godown accommodation for 5 lakh tonnes and the States for 2½ lakh tonnes, it can be argued that the Pool itself is a transitional arrangement and as such, imposing on it the cost of permanent structures would not be fair. States also come into the picture only so long as the Pool imports and distributes fertilisers to the States. The necessity for godown accommodation of these 7½ lakh tonnes in the buffer stock operation and intermediate storage for the pool is quite clear. The problem can be solved satisfactorily if the 7½ lakh tonnes accommodation is built up by the cooperative sector with the help from the Pool and the State Governments. If banks can reduce their margins to 25% and this 25% margin money is given to the cooperative system as subsidy by the Pool or the State Government whoever wants the godown, the godowns can be put up by the cooperative sector and utilised by the Pool or the State on a pre-arranged fair rent basis as necessary. The Agricultural Refinance Corporation or the banking sector can then find the loan funds necessary for the scheme. We commend to the Ministry of Agriculture this approach and suggest that the Pool should find the 25% subsidy out of the profits for the next three years for a programme to build 5 lakh tonnes of storage in the cooperative sector at convenient locations. The help of the National Cooperative Development Corporation can be taken in organising this work. Similarly, the State Government may find 25% of the money as subsidy from its Plan finance. The total amount of subsidy required from the Pool may be of the order of Rs. 1.75 crores. In respect of the State Governments, it will be around Rs. 87.5 lakhs. Judging from the Fourth Plan outlay for cooperative storage and the amount allocated so far, this should not present any difficulty for the States.

6.21 The study by the National Cooperatives Development Corporation shows that by the end of the Fourth Plan, storage capacity likely to be available in the cooperative sector for fertiliser storage at the marketing society and the primary co-operative levels will be of the order of 28.20 lakh tonnes. They have also recommended special steps to fill a gap of roughly 25 lakh tonnes storage in the cooperative sector. If our recommendations in the previous paragraphs are accepted 7½ lakh tonnes out of this will be provided for.

6.22 Three months' storage in the cooperative sector at the marketing society level and one month's storage at the primary cooperative level would mean by 1973-74 storage capacity of roughly 10 lakh tonnes. The important recommendation the study of the National Cooperative Development Corporation has made to the States is to divert the States resources, earmarked for godown construction in the cooperative sector, completely to the subsidy element leaving the co-operative to get loans from the banking sector. We recommend this approach with the modification that the subsidy element may be 25% of the cost of construction in the case of marketing societies and 37½% in the case of primary cooperatives. This will restore the quantum of subsidy to the level previously given by the States in the case of primary societies.

SECTION-VII

Arrangements for Retail Distribution—Transport

Railway Transport :

7.1 The Working Group on Fertilisers and Manures set up for the Fourth Plan (1969-74) had estimated that 75% of the bulk material would have to be moved by the railways. The Committee on Fertilisers had also stressed the need to maintain continuity of fertiliser supplies to storage godowns on the basis of a phased programme which took into account the monthly requirements of each State while ensuring that there was no accumulation in factories or ports and that adequate buffer stocks were held in advance of the seasons. This would be possible only if transport bottlenecks were identified and removed by taking proper steps.

7.2 During the discussions the Commission had with the States a d the fertiliser producers, the recurring complaint was that the Railways were not able to provide sufficient railway transport for movement of fertilisers from the factories and the ports to the consuming centres even for long distance movement. Another complaint was that even of the wagons provided, quite a number were open wagons where fertiliser had to be transported at consignee's risk of damage to the fertiliser in transit. Special steps had to be taken by the consignor to send guards on the trains to look after the open wagons. In bad weather, risk of damage was severe. The Ministry of Agriculture pointed out that in the Fertiliser Pool, where the transport costs should have gone below Rs. 30/- per tonne on the average, the average transport charge last year was of the order of Rs. 55/- per tonne. This was due to movement of fertiliser from port over long distances by road transport to consuming points. The FACT of Travancore sends the fertiliser mostly by road transport to their markets in four States. The main reason was the difficulty of easy rail transport to the consuming points. Railways have their own difficulties in having to distribute allocation of wagons between several competing demands in the various seasons.

7.3 In their evidence, the Railways have pointed out that the performance of the movement from Kandla and Bombay through broad and metre gauges during the current year has

not been satisfactory. The problem has become acute because the covered wagons often get immobilised in the States of Bengal and Assam. The problem is serious towards North Bengal and Assam. The Railways considered the possibility of isolating the movement to the eastern region so as to ensure fertiliser movements at a higher level. It seemed that isolation was not possible because all the stocks involved could not be isolated. The Railways had also examined the possibility of moving fertilisers by using box wagons in the same way as the movement of foodgrains and cement was handled. Such an arrangement could not be made on account of the fact that the routes to North Bihar and Assam passed through Farakka Barrage. The only thing possible as far as movement in North Bengal is concerned has been the commissioning of direct railing to the Farakka Barrage. The movement on this route has not been very regular but the Railways are trying to bring it forward by November. The problem has thus really been very difficult because of the inadequate production of wagons and insufficiency of covered wagons to handle movements to all parts of the Country. It is expected that with the opening of Farakka Barrage, fertiliser movement, particularly to the eastern sector will show some improvement.

7.4 The Railways have agreed that they will be in a position to give full transport for fertiliser movement for the months of March, April and May and again in the months of August, September and upto the 15th October for long distance haulage. We have discussed this problem in detail with fertiliser producers and the Pool authorities. Provision of three month's storage at intermediate points of distribution and heavy movement of stocks depleting even the silo storage during these months will help the Railways in getting through the movement satisfactorily. This arrangement agreed to by all concerned should be implemented.

7.5 During the other remaining months, long distance haulage has to be maintained, but the Railways would prefer that these movements take place in rake-loads of at least 1000 tonnes at a time. Obviously, all movements cannot be in rake loads. It has to be a mixture with accommodation on both sides. The Railways point out that by advance programming, long distance traffic can be suitably organised for the fertiliser movement. A suggestion was made that each fertiliser factory might give advance intimation of its requirements to its home railway authorities who will take the responsibility for putting through the movement. The Railway Board has pointed out

that this arrangement will have to be divided into two parts. Advance planning will have to be done for the two major seasons— the kharif and the rabi by the fertiliser producer. For movements within the home railway territory, the programme can be settled with the home railway. There will not be any difficulty in this matter. If, however, the movement is to be organised by the home railway for movement through one or more foreign railways, it will face a lot of difficulties. Such inter-railway movements are best arranged by the Transport Wing of the Railway Board. The Railway Board has suggested that if a coordinating agency can take up the work of collecting the demands of all the producers for the inter-railway movement in each of these seasons and then present a consolidated picture to the Transport Wing of the Railway Board, it will facilitate arrangement. There is a liaison group in the Ministry of Agriculture dealing with fertiliser transport for the Fertiliser Pool. We agree that it will facilitate movement if this liaison group also takes up for the fertiliser producers, the consolidation and presentation to the Railway Board of inter-railway transport requirements for each season and we have no doubt that fertiliser producers will only be to willing to cooperate in the matter. We have also discussed this with the Ministry of Agriculture The Ministry feels that it should be possible to undertake his work with a suitable strengthening of the liaison group. Werecommend this arrangement.

7.6 The fertiliser producers have represented that transport by open wagons should be avoided as this leads to pilfering and additional costs in guarding during transit. For long distance haulage in March, April and May and again August, September and upto 15th October, closed wagons should be provided as far as possible. The producers can also help the railways by accepting rake-loads to intermediate storage points in open wagons during fair weather. The Railways are prepared to supply the tarapulins and allow passes for the guards to be provided by the fertiliser producer on the train. This we think is a satisfactory arrangement and we would recommend accommodation on both sides on these lines. The Railways feel that even in the months other than those mentioned above, if rake-loads are offered, it is much easier to transport. The Railways are also agreeable to the suggestion that where a rake has been accepted by the producers, the Railways shall provide the facility of directional movement with wagons being earmarked for a limited number of stations in one direction. There may be intermediate points which cannot accept a full rake-load

without again leading to cross movements because the station cannot absorb that amount of fertiliser. The unloading between three or four other points would help better distribution and lowering of distribution costs.

7.7 The Fertiliser Association has pointed out that where rake-loads are accepted by the producers, this means additional cost in guarding and sometimes in damage. The Association has asked that the Railways should allow concessional freight rates for such rake movements and special additional incentive for accepting open wagons. We have discussed this point with the Railway Board. The Board points out that already fertilisers are under a losing tariff. Considering the financial situation of the Railways, it will not be fair to ask the Railways to lose further on this traffic. As mentioned in the previous paragraph, they are prepared to allow guards on the trains and provide the tarapulins and they will give passes for the guards. We, therefore, feel that it is not desirable to press the Railways for any concessional tariff more than what has been already given to fertilisers. At the same time, we would request the Railways to see that transit damage is minimised by providing closed wagons as far as possible and specially during the rainy season.

7.8 Concessional freight is given on fertilisers provided they are despatched directly to registered selling points. Under the revised arrangements, long distance haulage has to be organised to intermediate storage points because of difficulties of transport. The Railways have agreed that for this transport to intermediate storage points, the same freight concession will be allowed. Necessary amendments to their rules will have to be made.

7.9 The Fertiliser Association has suggested that where intermediate storage is accepted by the producers, the Railways should give the telescopic freight rates to the further movement from the intermediate point to the registered selling point. The Association has also mentioned that if this is not possible for all stations, at least for break-of-guage stations this facility should be given as provided for petroleum products. We have discussed this in detail with the Railways. The Railways point out that breaking a movement into two always means additional service charges in the railways. They also point out that petroleum concessions are based on certain other charges and limited to very few stations. In view of the fact that fertiliser are already losing in tariff, they are not inclined to consider this representation. We also feel it is not worth pressing for this.

If the intermediate stations are suitably selected, further movement to selling points can be substantially by road. This problem may not be very serious.

7.10 The Fertiliser Association has represented that unless fertiliser movement is given sufficient priority, with all the best intention, the fertiliser will not move. The Association has also pointed out that long haulage guarantee may be meaningless because of various temporary restrictions placed on inter-railway movement for various reasons. The Railway Board has agreed that if an advance programme is drawn up through the good offices of the Ministry of Agriculture through a coordination cell, this programmed movement for long haulage can be declared falling under Class-C priority, next to only foodgrains. The Railway also point out that the coordination cell with close liaison with the Railway Board Transport Wing would be in a position to ease out quickly any restrictions that may arise. The benefits of such a close liaison are obvious. They recommend for trying out this system. We agree with them.

7.11 A complaint was made to the Commission that an End-use Certificate from the District Agricultural Officer of the destination is demanded for entitlement to concessional freight rates for fertilisers. The Railway Board has pointed out that this restriction, at present, applies to only five chemicals which are used as fertilisers. It is advised by the Ministry of Agriculture in this matter. Where non-agricultural use of the chemical is extremely limited, there is a cause for freeing the restriction. The Board would like this matter to be examined by the Ministry of Agriculture for a final decision. It is agreed on all sides that the End-use Certificate is difficult to get and does create complications. We have discussed this problem with the Ministry of Agriculture. The Ministry also agrees with this view and is anxious to do away with the cumbersome procedure. Considering the difficulties created by this requirement, we recommend that the End-use Certificate be done away with. If at all a certificate is to be given, the responsibility should be on the despatcher.

7.12 Short haulage on railways from intermediate storage points to registered sale points should normally be a movement of more than 200 kms. For rail transport where the road movement is not possible because of lack of bridges, the Railways would be prepared to accept shorter distance booking. This appears to be a reasonable suggestion and may be tried out.

Transport of Fertilisers to Interior and backward Areas:

7.13 There are many production areas in the country which are far from the railheads. Therefore, delivery by the producer at a railhead or a railhead intermediary storage will not deal with such markets effectively. The Pool has evolved a system by which it has agreed to deliver at four convenient roadheads in each such district as has poor railway connections. The transport costs by road to the roadheads are averaged in the transport costs of the Pool. We recommend a similar approach by each of the producers in his main areas of marketing. Particularly the Fertiliser Corporation of India, which will soon be producing nearly half the fertiliser consumed in the country, must set the lead by accepting such convenient roadheads for delivery to the wholesaler or retailer. The best way to ensure that this is done is to locate the intermediary storage depot of the producer at such roadheads. We are aware that even this will not provide good marketing to areas too far away from the railheads. Very few producers will try to tap these areas as a regular market for their products. Such distant markets must be specially nurtured by the Ministry of Agriculture by, if necessary, a transport subsidy for the road transport so that the burden of transport does not fall on the farmers. This applies to difficult hill areas like those in Jammu & Kashmir, Himachal Pradesh, Nagaland and other areas like Assam and Andaman and Nicobar Islands. The Pool is now absorbing the heavy transport charges to these specially backward areas also in its formula of four roadheads for each backward district. Imported fertilisers are now available at cheaper prices and as such the Pool can provide for this extra expenditure without any loss to it. We recommend that this arrangement should continue as long as the Pool is a big supplier of fertilisers in the country.

7.14 Once the system of delivery at roadheads in the districts, poorly served by railways, is accepted, there is need for the construction of intermediate storages at these roadheads. Previously, the cooperative system had organised railhead depots for storage. The system can now take a good lead in the matter, since it may be difficult for the Central Pool to maintain and control these storage points in far-flung areas. We understand that the cooperative system will be willing to put up these storages provided 25% subsidy is given from the Pool for construction. Assuming that 400 such godowns of roughly 1,000 tonnes each will be involved costing about Rs. 5.6 crores, the subsidy element from the Pool will be Rs. 1.40 crores. We recommend that the Pool

may, in the next three years, allocate about Rs. 47 lakhs each as subsidy for this programme to the cooperative sector. The cooperative sector should get the balance from the banking sector. The programme may be handled by the National Co-operative Development Corporation.

Problem of Shortage in Transit :

7.15 There are persistent complaints about faulty consignment of fertilisers despatched from different Pool sources *viz.* Food Corporation of India and the State Warehousing Corporations. Such complaints are very frequent in the consignments despatched from the Food Corporation of India, Calcutta. The consignments, it is complained, are found defective on the following accounts:—

(a) The stock is despatched in town, cut, loose, hook-marked and unstandard bags.

(b) The stock is sometimes found to be mixed with foreign materials like ash, coal, dust and iron scraps and go-down sweepings.

(c) In most cases, the containers are too weak to stand the transit and they burst either in transit or at the time of unloading. This entails heavy expenditure on the Apex Cooperative Union in rebagging at the time of storage and sales.

(d) In some cases, 50 Kg. bags are found rebagged in 100 Kg. bags resulting in loss of the content at least by the actual weight of the containers.

(e) The consignments are at times received in a condition where it is difficult to identify any fertiliser.

(f) The Railway Receipts are generally conditional and the Railways do not, therefore, undertake weighment or grant shortage certificates in such cases and do not also entertain claims to reimburse the shortage so found.

(g) Issue Vouchers and Revised Issue Vouchers are generally received after about six months of the receipt of a stock and weight shown on these Vouchers differs from the weight shown in the R.R.

7.16 Bulk fertilisers imported by the Pool are bagged at the ports by the Food Corporation of India before despatch to railhead destinations. Due to certain difficulties at the ports,

in most cases, non-standard bags are despatched and the cooperative wholesalers are expected to undertake standardisation at the destination before supplying the material to the retailers. It is also found that the fertilisers received at the destinations are short of weight and since both the Railways and the Food Corporation of India refuse to entertain the claim due to shortage, the societies which receive the wagons are forced to make good the losses. The efforts by the cooperatives to get reimbursement from the Railways have generally failed. It has been represented that in 1965-66, the Punjab Marketing Federation alone received 210 tonnes of fertilisers short out of 10,025 tonnes registering on an average a shortage of 2.09 per cent in rail transit.

In many cases, the Federation could not prefer the claims because the goods were despatched, at the owner's risk. In Rajasthan, as against 27,830 tonnes of fertilisers received from the Pool in 1965-66 a shortage of 119 tonnes was noticed. The Madhya Pradesh Marketing Federation reported in 1967 a shortage of 1,166 tonnes worth Rs. 5.63 lakhs out of a total quantity of 88,422 tonnes despatched between 1960-61 and 1966-67. The claims of the Bihar Cooperative Marketing Union totalling Rs. 25 lakhs are reported to be pending adjustment with the Government of India.

7.17. A Study Team set up by the National Co-operative Development Corporation also analysed the problem of shortages in transit in rail movement in the States of Bihar, Madhya Pradesh, Punjab, Uttar Pradesh, Andhra Pradesh, Tamil Nadu and Maharashtra. The shortages in bags delivered at the railheads were reported to vary between 10 and 40 per cent on some consignments. The National Cooperative Development Corporation has, therefore, suggested that over and above the margin provided for shortages occurring during loading and unloading, a margin may be allowed by the Central Fertiliser Pool for shortages in rail transit.

7.18. The Ministry of Agriculture also admits that there is shortage and damage to Pool fertiliser bags due to the use of hooks by the labourers at our ports.

The Pool has taken the following measures to minimise the extent of shortage:—

(a) Efforts have been made to substitute longer hooks by shorter hooks;

(b) Repair arrangements for torn bags at ports have been strengthened;

(c) The Food Corporation of India has been asked to intensify supervision and surprise checks;

(d) The Food Corporation of India has been asked to introduce a system of awards to gang-staff whose handling is found to be careful during surprise checks;

(e) Mechanisation or semi-mechanisation to the extent possible is being introduced. There are arrangements at Bombay for mechanical unloading, conveying and bagging and, at Kandla, there is a proposal to set up a mechanised bulk fertiliser handling equipment;

(f) Standardisation of handling of bulk fertilisers on the wharfs has been introduced at all the ports where these are being handled in bulk. The system of unstandardised bags coming from the holds of bulk ships has been given up. Efforts are being made to improve further the quality of standardisation by introducing bagging plants and ultimately mechanised handling.

7.19. We have discussed this problem with the concerned authorities. We understand that the mechanical handling and standardisation at the ports will reduce damage to the bags, but not eliminate it. The use of shorter hooks may still cause some damage though on a reduced scale. We note that arrangements for greater supervision are being made. This is necessary. We have also mentioned earlier that arrangements for supervision and safety will be required whenever fertilisesers are moved in open wagons. We, however, feel that in spite of these arrangements some shortages will continue to occur during rail transit. There is, therefore, need to provide for adequate shortage allowance. The present shortage allowance in the distribution margin does not cover shortages during rail transit.

7.20. These shortages, as we have seen, relate to supplies from the Pool which mostly go to the cooperative sector. Considering the shortages occurring during rail transit of Pool fertilisers which now place a burden on the cooperatives, we recommend a special allowance for such shortages to the cooperatives. In our opinion, half per cent per tonne of the value of the fertilisers supplied from the Pool should be built into the distribution margin specifically for the cooperatives. Since the Pool has some surpluses arising out of its purchases of fertilisers in bulk, we think that it should be possible for the Pool to provide this margin to help the cooperatives.

SECTION VIII

Arrangements for Retail Distribution—Distribution Margins

8.1. The distribution margins recommended by the Committee on Fertilisers were last revised upward in 1968 as a result of devaluation. The margins recommended by the Committee and those in force at present are shown below for Ammonium sulphate Urea, C.A.N. and Ammonium Sulphate Nitrate:

	Margins recommended by the Fertiliser Committee	Margins in force at present
	(Rs. per tonne)	
1. Ammonium Sulphate	48.00	55.00
2. Urea	66.50	80.00
3. C.A.N.	46.50	55.00
4. Ammonium Sulphate Nitrate (26% N) . .	53.50	62.00

8.2. As the position has undergone some change since the Committee submitted its Report, it will be necessary to modify the margins on the basis of the present conditions. We have described in the previous sections of this Report the newly

developing pattern of distribution and the compulsions of making suitable arrangements to ensure that fertilisers reach areas of consumption away from the railheads. Before we give our recommendations on the revised margins, we are dealing, in the following paragraphs, with certain aspects of the distribution margin.

Incentive to Cooperative System:

Promotion incentive:

8.3. Recognising the importance of promoting fertiliser use, the committee on Fertilisers had suggested the institution of incentive awards to depot holders who were able to push up sales. A provision of Rs. 2 had been made in the model break-up of the distribution margin towards incentive commission for the distribution of Pool fertilisers. The Committee recommended that this amount should be funded and operated by district level committees for encouraging dealers who exceeded the targets fixed for them.

8.4. A study made by the National Cooperative Development Corporation and the Ministry of Agriculture indicated that the provision made in the model break-up was not being used for the purpose for which it was intended. It was noticed that in several States, either no provision was being made in the distribution margin towards incentive commission or wherever it was made, it was being passed on as a part of the commission to the retailers, irrespective of whether the targets laid down had been achieved or not. The study recommended that the State Government should ensure that the incentive commission was funded and utilised for operating some incentive schemes. These suggestions were commended to the State Governments.

8.5. Schemes for providing incentive bonus to the employees of cooperative and village level workers have been formulated and are being implemented in the States of Madhya Pradesh, Rajasthan and Uttar Pradesh. In Bihar also, the State Marketing Union is allowing incentive commission to their sales staff for the clearance of old stocks of superphosphate and rock phosphate. The scheme in Madhya Pradesh allows for incentive bonus to the employees at different levels by the Apex Marketing Federation for their performance in the distribution of fertilisers.

The basis on which the bonus is paid to the different categories of employees is indicated in the Table below:—

Table 7

Rates af Incentive Bonus

Type of employee	On selling 10% more fertiliser than in the previous year	On selling 25% more fertiliser than in the previous year
	(Rs. per tonne)	
(a) Society employee/manager of the distribution centre	0.40	0.70
(b) Additional society employee/Gramsevak after the approval of the Government.	0.20	0.30
(c) Society employee/manager of other service co-operatives.	0.30	0.45
(d) Primary marketing society/employees of the apex marketing federation where the primary marketing societies are not functioning.	0.20	0.30
(e) Distribution officer and his concerned employees in case the records are maintained and reports are submitted in time.	0.15	0.30
(f) Manager of the branch of the Central Cooperative Bank. It will be the duty of the supervisor to see that the records in their areas of operation are properly maintained and also to ensure availability of fertiliser in time. The supervisor who will not be performing this duty will not be allowed this bonus.	0.25	0.40
Rs.	1.50	2.45

In operating the scheme, it is envisaged that the targets of fertiliser distribution for the year will be split in respect of each primary marketing society of the district, the branches of the central cooperative bank, fertiliser distribution centres and each service cooperative. These targets which are to be fixed in the light of the sales in the previous year, will be at least 20% higher than the amount of fertiliser distributed in the previous year.

8.6. One of the means for rapid fertiliser promotion is to give incentive to various links in the cooperative chain to increase fertiliser sales. The Madhya Pradesh experiment has worked very well. In view of the poor performance in the consumption of fertilisers in different States, we feel that such incentive schemes should be formulated and implemented throughout the country. There is only a provision of Rs. 2/- per tonne in the margin provided by the Committee on Fertilisers for incentive awards for better sales. In view of the possibilities of increasing fertiliser consumption through a suitable promotion incentive, we recommend that the Pool may allocate to the cooperative sector an additional Rs. 2/- per tonne (making up in all Rs. 4/- per tonne) of fertilisers supplied to allow for a well thought out incentive programme. This will support the fertiliser promotion venture.

8.7 One of the main difficulties in formulating such incentive schemes has so far been the inadequacy of the distribution margin and in some cases irrational distribution of margin between different agencies and for different functions. In order that the incentive bonus produced the desired result, it would be necessary to ensure a fair margin to the primary society and the various links according to the responsibilities undertaken.

Incentive Margin for Factory Supplies :

8.8, The cooperatives are by far the main distributors of fertilisers in the country. They have taken up the responsibility of supplying fertilisers not only in good areas but also in less favourable distant areas. The Apex organisations make purchases in bulk for distribution of fertilisers through their network to the various consumption areas. The fertiliser producers should not, therefore, equate the cooperative sector with the private trade.

8.9. The Fertiliser Corporation of India, in its evidence has stated that the Corporation has already formulated a scheme for dealing with large organisations on special basis for bulk purchases.

To be entitled to this special treatment, these organisations have to lift the fertilisers uniformally during the year. The policy is to negotiate with these organisations for contracts mutually satisfactory to the Corporation and the organisations. The Corporation also lays down a condition that these organisations have to lift annually fast moving popular products and also slow

moving products and new products in the interest of balanced fertilisation. Thus, the negotiations will be on the basis of a package. This will entitle the buyer to get additional margin over and above the base margin for the dealer. We understand that the Corporation has had talks on this basis with organisations in Bihar, Punjab, Haryana and Uttar Pradesh.

8.10. We feel that special margins for bulk purchases should be provided to the Apex organisations by all the fertiliser producers considering the special role that the cooperatives have to play in the entire distribution system. We also recommend that the National Cooperative Development Corporation should urge the apex organisations in the States to negotiate such contracts with the Fertiliser Corporation and other fertiliser producers. We feel that such an approach will be beneficial to the cooperatives.

Storage Margins for Factory Supplies :

8.11. In the margins proposed by the Committee on Fertilisers there is a provision for two months' interest free supply to the wholesaler from the factory or the pool and four months' interest charges on the average to the retailers. In the changed distribution pattern this needs a modification. In the evidence before us, the Fertiliser Corporation of India and the other factories are generally in favour of providing only 30 days credit on their despatches. Where the wholesaler or the retailer discharges the bill within the free period, a rebate is given in the interest charge and deducted from the price charged. The factories have pointed out that in the new pattern it should be enough if, in addition to this accommodation, three months' interest charge is provided in the distribution margin between the wholesaler and the retailer together. It has also been represented that in fertilisers where per unit cost is low because of the low percentage of nutrients, like ammonium sulphate and calcium ammonium nitrate and which are very popular but in short supply, the time taken for disposal is very short and as such it will be fair to reduce the interest charges. In all cases where the fertiliser is moved directly to the retailer and the wholesaler acts only as the go-between, the one month credit allowed on the goods should be sufficient for the wholesaler. Three months' credit or in case of the quick selling fertilisers, whatever is a fair interest charge should go to the retailer. Where the goods are stored by the wholesaler and then passed on to the retailer, the interest charges of three months should be divided between them suitably according to the relative responsibility for holding the stocks. It is difficult to

define this responsibility closely and we shall have to leave this to the local conditions.

8.12. In the margins provided by the Committee on Fertilisers there is a storage allowance for six months on the average. There is also a provision for shortage of half per cent. In the new pattern of storage at the wholesaler's level or at the retailer's level, all stocks moved to the retailer direct from factory or main depot can never be held more than three months in stock except in most unusual cases. This storage charge will be paid to the retailer if he takes stocks directly from the factory or the main depot and to the wholesaler if he acts as the storage point for smaller retailers. In the latter case, a nominal temporary storage charge of Rs. 1.50 per tonne should be added in the margin to be paid to the retailer.

8.13. In the new system that is developing, the bulk of the storage has to be handled by the factory or its main distributors. In the evidence before us, both the Fertiliser Corporation of India and the other factories have mentioned that by now they have been able to adjust their markets in such a way that stocks will move to consumption areas generally throughout the year except during 3 to 4 months during the early part of the calendar year. This period changes according to the pattern of the main crop in the area of marketing. It is also agreed that on the average an intermediate storage of three months' production capacity should be sufficient to allow for this holdup in marketing. The new pattern will require provision of storage space by the fertiliser factory and their main distributors for intermediate storage for about three months' production of the factory. The Fertiliser Corporation of India has mentioned in its evidence that for complex fertilisers the Corporation may require four months' storage as its pattern of accumulation may lead to a four months' holding; but even here an average storage charge of three months should deal with the problem. The Commission also undertands that the fertiliser factories are now planning for intermediate sorage of this order in their distribution system. It will, therefore, be proper that in the margins previously contemplated, three months' storage with handling and loading along with interest charges for the holding for three months on the average should accrue to the factory or the main distributor, whoever undertakes this responsibility in the fertiliser distribution chain.

Transport Margin for Factory Supplies :

8.14. When the Committee on Fertilisers studied the problem of fertiliser distribution, the Central Pool was the major distributor

of fertiliser in the country and was also the sole distributor of nitrogenous fertilisers. The Pool had evolved the system of averaging out its transport cost to the railhead of delivery to the wholesaler and this average cost was kept at Rs. 30/- per tonne of fertiliser. The fertiliser factories, which have started production and distribution on a large scale, have also kept this Rs. 30/- as a notional average transport cost to the railhead as available in the distribution channel. Because of the difficulties of railway transport, the Pool has had to take recourse to fairly long distance road haulage on a substantial basis. As a result, the average cost of transport to railhead in the Pool was Rs. 55/- per tonne last year. This problem has been dealt with in paragraphs 7.21 to 7.25. The fertiliser producers, on the other hand, have been able to absorb even the road transport in their overall notional limit of Rs. 30/- per tonne of fertilisers. This has been possible because each factory has an area of marketing near its factory where it markets its product substantially. It taps distant markets but only for a fraction of its production. As an example, we understand that FACT which taps the markets of Kerala, Mysore, Tamil Nadu and Andhra Pradesh, has been able to keep the transport average charge inclusive of handling to within Rs. 27/- per tonne. We are informed that the factory transports most of its product by road to destination. Factories like Gorakhpur of the Fertiliser Corporation of India will be having an average transport cost of much less than Rs. 30/- per tonne. We will not be far wrong in drawing the board conclusion that the producers will be able to organise the transport costs to railhead of the wholesaler or retail distributor to well within Rs. 30/- per tonne. The savings are now being diverted to the aggressive promotion operation which all factories have found most necessary. This trend is good and is to be supported.

8.15. In the margins proposed by the Committee on Fertilisers, there is a lump-sum of Rs. 10/- for road transport to the wholesalers' and retailers' storage godowns. This margin would have allowed for a transport of an average of 75 Kms from the railhead to the retail godowns in the interior at 1965 costs. Today, this will pay only for a transport of an average of 50 Kms. There are many areas in the country where there is demand for fertilisers and which are distant from the railheads. Many areas with good potential like the irrigated areas in middle-India, the States of Madhya Pradesh and Orissa and as extreme cases Jammu and Kashmir, Assam, Andamans and Nicobars have the consumption areas far from railheads. There have been complaints before us that under the retail disbtribution system in the private

sector developing under the fertiliser producers, the traders generally dispose of their stocks near railheads and avoid the interior markets. As a result, the interior markets have either to pay black-market prices or be starved of fertilisers. This places a great strain on the cooperative system which has undertaken a fair distribution programme wherever there is a demand irrespective of the distance of the market from the railhead. We specifically went into the question whether the complaint against the private retailers had any base. We find that in the distribution margins of the factories, a provision of only Rs. 4/- per tonne has been made for transport from the railhead to the retailers' storage. Whereas even Rs. 10/- provided by the Committee on Fertilisers would have been an under-estimate for a similar distribution complex today, it is obvious that the provision of Rs. 4/- for this purpose deliberately encourages sales near the railheads. The fertilisers producers have been keen to point out that they have a supervisory system to ensure that their retailers take the fertiliser to their markets and sell it there. As retail trade is not a philanthropy, it is obvious that the limitation of transport margin will only result in the starvation of the interior areas of fertilisers. The cooperatives were, therefore, correct in their complaint that the main burden for serving interior station was falling on them. The situation needs correction. The obvious correction is to provide in the margin a sufficient amount to pay for the road transport from the railhead to the retailers' depot. The fertiliser producers are of the view that this will entail too much of detailed accounting which may be difficult. We have no doubt at all that there must be a rationale in the allowance of transport margin to the wholesaler and the retailer. The fertiliser producers must follow one of the two alternatives given below and provide for the necessary margin in the terms of business with their wholesaler and retailers.

(a) Estimate the distance from railhead to the wholesalers' or retailers' godowns to which the fertilisers move and fix for each wholesaler and each retailer a transport margin per tonne of fertiliser he takes.

(b) Divide the wholesalers and retailers who take stocks into 3 or 4 classes based on the distance of the godown from the railhead and give slab rates to avoid individual calculation. For example, dealers can be classed into those requiring Rs. 6/- per tonne, those requiring Rs. 12/- those deserving Rs. 18/- and those deserving Rs.2 4/-. The average cost will be roughly Rs. 15./-.

8.16 The producers should be able to follow one of these systems. They are already following a single delivery rate for various zones and averaging out their own transport cost to railheads. The proposal we have made is only an extension of this exercise. If the producer is dealing with the cooperative marketing system at its apex, it can work out an average transport charge which can be based on an accepted pattern of distribution to retail heads and the task of paying actual transport to the marketing societies and primary cooperatives can be left to the cooperative organisation.

Revised Break-up of Distribution Margins

8.17 The costs of various elements of distribution margins are more in 1971 than they were in 1965 on which the costing had been based. The Committee on Fertilisers had recommended a lump sum of Rs. 10/- for transport charges from railhead destinations to the wholesalers' and retailers' godowns. This cost has gone up by about 50 per cent due to taxes on fuel and other factors. As such, it will be reasonable to allow a margin of Rs. 15/- for transport instead of Rs. 10/-. The cost of handling charges has also increased. In view of the higher cost of labour it will be fair to increase the provision under handling charges from Rs. 5/- to Rs. 8/-. As regards godown rent, the earlier allowance was 80 paise per tonne per month. The current rate is of the order of Rs. 1.50 per tonne per month. We have indicated earlier that there will be an average holding of stocks for six months. It will, therefore, be reasonable to allow for storage charges at these rates for six months to be divided between various links according to the responsibility undertaken. There has also been a rise in the interest rates. It will, therefore, be proper to provide for an interest allowance at the rate of 10% for storage of six months instead of the present 8%. We have already explained the phenomenon of short weight during rail transits. In view of the difficulties explained earlier in claiming compensation for this shortage during rail transportation we have recommended that an additional allowance of 1/2% per tonne of the value of fertiliser supplied from the Pool be given specially to the cooperatives. We have also recommended a special incentive commission of Rs. 2/- to the cooperative in addition to the existing Rs. 2/- in the distribution margin for promotion.

8.18 There has been a lot of complaint before us that the fertiliser producers who produce ammonium sulphate and calcium ammonium nitrate have reduced margins to the distributors so drastically that black-marketing becomes inevitable. Particularly,

the cooperative interests have pointed out that the margins offered are so low that a fair distribution system taking the fertilisers to all the important consuming centres must necessarily involve extra costs to the cooperative distribution system, unless the black-marketing is allowed which obviously the cooperative system cannot support. On their side, the fertiliser producers point out that ammonium sulphate and calcium ammonium nitrate are going to be very minor products in the total fertiliser complex developing in the mid-seventies. The country is not going to put up any large plants for producing either ammonium sulphate or calcium ammonium nitrate in any quantity. On the other hand, because fertiliser promotion was started in this country with ammonium sulphate and calcium ammonium nitrate was the next largest internal production which had special utility in certain types of soils, the demands for both these fertilisers are quite large and farmers are prepared to grab these fertilisers wherever and whenever they are available. There will therefore, always be a good market for these two products., Contrary to the usual practice of farmers taking their own time to purchase their fertiliser requirements, it is noticed that in these two fertilisers there is no need for any hold-up of stocks in any part of the chain of distribution. The contention of the producers is, therefore, that the various margins provided on the basis of the normal distribution system which applies to all the other fertilisers shall not be made applicable to these two fertilisers. We have carefully considered both sides of the picture. Both these fertilisers are already high priced in the market compare l to their nutrient content. The price to the farmer cannot be increased further. In the Report of the Committee on Fertilisers, the total distribution margin proposed fo sulphate of ammonia was Rs. 48/- per tonne and for calcium ammonium nitrate Rs. 46.50 per tonne. The present margins should be roughly of the order of Rs. 85.50 for sulphate of ammonia and Rs. 89.25 for calcium ammonium nitrate, if full margins are to be allowed for all the items according to the normal distribution pattern. The problem, in our view, can be solved satisfactorily if the following modifications in the distribution margins are made for these two fertilisers :—

(a) As against a total storage period of 6 months on the average for every fertiliser, the storage period for these two fertilisers may be limited to 3 months on the average and the storage and interest charges for these to be divided one month to the producer and two months to the distributor, both wholesale and retail, according to relative responsibility.

(b) Full transport margin should be provided in the contracts with the wholesalers and retailers as for any other fertiliser according to distances from railheads to distribution point, as explained in paragraph 8.15.

(c) Handling and loading charges should be allowed as for the other fertilisers.

(d) There is no need to provide any incentive commission as for other fertilisers. Commission to the dealers and for shortage should be allowed as for other fertilisers.

8.19 There was some representation that prices to the farmer may have to be raised because of increased margins. On the other hand, in our discussions with the fertiliser producers, it was made clear by the producers that in the light of the various distribution margins now accepted, it was not necessary to increase the overall price for any of the fertilisers. We also notice that in spite of the rise in the cost of raw materials and other inputs in fertiliser promotion, producers have been able to bring down the prices gradually even though not to the amount that was originally expected by the Committee on Fertilisers.

8.20 As a State Policy, intensive development of production by the small and marginal farmers to enable them to come upto reasonable levels of growth has been generally accepted. Fertiliser consumption by this sector, therefore, will be an important component of the overall fertiliser consumption. It is felt that risks of operation being involved, it may not be possible for the small and marginal farmers to take part fully in these programmes of development unless prices of fertilisers to them are to some extent, reduced. A proposal has been mooted that it may be examined whether small and marginal farmers can be identified for supply of fertilisers at non-profit-no-loss basis through public sector enterprise. We note that there are certain provisions for input subsidy including fertilisers particularly in the marginal Farmers Scheme and generally in the pilot schemes for dry areas. We have also noted during our discussions with the States that the main problem with regard to the use of fertilisers by small and marginal farmers is the lack of credit on time and proper structure. The Commission is examining the schemes for small farmers and marginal farmers including agricultural labour, for an interim report and proposes to deal with these aspects in full details in that report.

8.21 On the basis of what we have said in the previous paragraphs we recommend the revised margins as indicated in the Table below :

TABLE 8

Revised Break-up of the Distribution Margins

	Sulphate of Ammonia	Urea	Ammonium Sulphate Nitrate	C.A.N. 26% N
1. Commission to Dealer				
Wholesaler 1% . .	4.75	8.40	5.64	5.15
Retailer 2½% . . .	11.85	21.00	14.10	12.85
2. (a) Incentive commission (to be funded)	..	2.00	2.00	..
(b) Special incentive commission to cooperatives for promotion	..	2.00	2.00	..
3. Administrative charges. .	1.00	1.00	1.00	1.00
4. Transport charges . .	15.00	15.00	15.00	15.00
5. Handling	8.00	8.00	8.00	8.00
6. Godown rent @1.50 per tonne for six months	4.50 (for 3 months)	9.00	9.00	4.50 (for 3 months)
7. Interest charges @10% for six months.	12.00 (for 3 months)	42.00	28.00	12.85 (for 3 months)
8. (a) Shortages ½% . .	2.35	4.20	2.80	2.55
(b) Special shortage allowance to cooperatives ½%	2.35	4.20	2.80	2.55
9. Supervision and Publicity 2/3rd of 1%	3.20	5.60	3.66	3.40
Total :	65.00	122.40	94.00	67.85

Distribution Margins for Muriate of Potash

8.22 We have already noted that the Indian Potash Supply Agency (IPSA) has been entrusted with the responsibility of import and distribution of Muriate of Potash. The Central Fertiliser Pool re-imburses the cost of handling including freight charges on transportation from the port, storage, financing,

administrative and other expenditure. The terms of agreement under which the IPSA is to handle the import and distribution are to be settled between the company and the Ministry of Agriculture. The Pool is presently re-imbursing to the IPSA Rs. 92 per tonne which includes, among other elements, expenditure on promotion of Rs. 8/-. and a margin of Rs. 5/-towards profit, the issue price of Muriate of Potash has been determined at Rs. 473/- per tonne by the Pool which allows for a distribution margin of Rs. 50/- per tonne. The notional break-up of this margin is still to be worked out either by the Ministry of Agriculture or IPSA.

8.23 It is learnt that the IPSA has started appointing more franchised dealers in its marketing areas in order to improve its distribution system. The agency also maintains buffer godowns in various parts of the country. However, the consumption of potash is limited mainly to areas near the railheads and the interior areas are still to be covered sufficiently. We have stressed in this Report that there is an imperative need to promote balanced fertiliser application. Viewed in this context, it will be desirable for the IPSA to take up an aggressive promotion venture to cover larger areas including interior areas. There is, therefore, a need to increase the allowance for promotion given to the IPSA by the Pool. We recommend that in the interest of promoting balanced fertiliser application all over the country, the margin for promotion be increased suitably. It will also be desirable to provide for incentive margin in the distribution margin to encourage sales by wholesalers and retailers in the interior areas. We have already recommended a special incentive commission to the cooperatives. This may also be provided in the case of Muriate of Potash.

8.24 We understand that the IPSA is given interest free credit for 55 days to its dealers both wholesalers and retailers. In the areas not covered by its sole distributors, the Company sells fertilisers direct to retailers also. We have been given to understand that nearly 60 to 70 per cent of its total sales is financed on the basis of this interest free credit.

8.25 Besides interest-free credit, the Company is operating a scheme of cash rebates and quantity rebates to its dealers, private as well as cooperative. Dealers identing for stocks in excess of 500 tonnes at a time will get a rebate in the price of

potash ranging from Rs. 3 to Rs. 12 per tonne on the following basis :

Slab (in tonnes)	Rate (per tonne Rs.)
500-900	3
1000-1999	5
2000-3999	7
4000-7999	9
8000 and above	12

In addition, a cash rebate of Rs. 8/- per tonne is allowed for full payment and taking immediate delivery of a minimum of 100 tonnes at a time. This rebate is also available both to cooperatives and private dealers.

8.26 We understand that the IPSA has represented to the Ministry of Agriculture for re-imbursing the cost of interest free credit. We recommend that this cost may be reimbursed to the IPSA on the same basis as for the Pool fertilisers for which a 60 days' interest free credit is allowed.

Problem of old Stocks with Cooperatives

8.27 Till 1965-66, the cooperatives were distributing Pool fertilisers on consignment basis on behalf of the State Governments. On the recommendation of the Committee on Fertilisers, the consignment facilities were withdrawn by the State Governments with effect from 1966-67. The Government of Maharashtra was the last to do so with effect from 1971-72.

8.28 During the period of consignment supplies, the State had indented large quantities of fertilisers from the Pool on the basis of consumption targets in the annual plans and keeping in view the requirements of fertilisers for special programmes like the high yielding varieties programme undertaken by the State Agricultural Departments. As a result of gaps in extension work under the high yielding varieties programmes and the initial slow response to the new fertilisers, there was a large carryover of unsold stocks from year to year with the cooperatives. As a result, heavy expenditure was incurred by the cooperatives on hiring large accommodation for the storage of the accumul-

ated stocks of fertilisers. An idea of the accumulation at the end of 1969 may be had from the Table given below :—

TABLE 9

Fertilisers in stock for over six months

State	Quantity (tonnes)	Value (Rs. in lakhs)
Andhra Pradesh	64,589	520
Bihar	60,000	450
Gujarat	21,400	15
Haryana	37,098	286
Mysore	2,87,486	1,682
Orissa	17,347	108
Punjab	87,469	610
Uttar Pradesh	1,53,000	1,307
Total	7,28,389	4978

8.29 The position was no better in other States. It was estimated, that at the end of 1964, the cooperatives held Rs. 100 crores worth of Pool fertilisers in stock. Since then, cooperatives have been making efforts to liquidate these stocks. In some States, extra incentive commission was allowed to the salesmen, as in Uttar Pradesh and Bihar, while in some others, the cooperatives had to rebag the stocks and transport them to other stations where there was some demand for them. In Uttar Pradesh, a rebate upto Rs. 35/- per tonne was allowed to the purchasers of a truckload of urea and Rs. 20/- per tonne to the buyers of less than a truckload. A rebate of Re. 1/- per bag of NPK mixtures was also allowed. In States like Andhra Pradesh, the State Government reduced the price of DAP. The Pool also reduced the price of coloured ammonium sulphate. These reductions in prices helped in reducing the stocks. Although a substantial quantity of old stocks has been cleared as a result of these measures, the value of unsold stocks even now with the cooperatives is likely to exceed Rs. 35 crores. The U.P. Federation alone has recently reported stocks worth Rs. 4.7 crores. The Mysore Marketing Federation held old stocks of 76,334 tonnes worth Rs. 5.94 crores as on 31-5-1971. Such stocks in Rajasthan and Haryana at the end of June 1970 were worth Rs. 52 lakhs and Rs. 3.16 crores respectively. In Madhya Pradesh, the Federation had 5,338 tonnes of six year old unsold fertilisers stocks as on 30-6-1970.

8.30 The cooperatives are incurring heavy extra expenditure on storage of these old stocks as also on payment of interest from the date the consignment facility was withdrawn and the stocks were transferred/sold to the societies. In States where the societies have paid for these stocks by borrowing from commercial banks, as in Mysore, it has made cash in flow of funds difficult. The Mysore Federation paid interest to the bank amounting to Rs. 19.67 lakhs during 1969-70 for borrowings against these stocks. In some other States, such as Uttar Pradesh and Bihar, where the State Government have made book transfer of fertilisers to cooperatives and are recovering their dues from out of sale proceeds, heavy debits have been raised against the cooperatives on account of interest alone.

8.31 The Ministry of Agriculture initially tried to solve this problem through bilateral negotiations between the State Governments and movement of surplus stocks to the State requiring these fertilisers. When this did not produce the desired result, the Ministry made efforts to get the stocks moved to other States on the basis of decisions taken in the Zonal Conferences. There were, however, several problems in this movement including the question as to who would bear the re-bagging charges, etc. However, in a number of cases, the surplus stocks were absorbed by such adjustments.

8.32 The old stocks are clearly a big burden on the cooperatives. If the cooperatives have to continue in fertiliser distribution, it is necessary to release them of this burden. This is creating a lot of difficulty in organising the cooperative system for the massive demand for fertilisers arising at present. Till, therefore, this old account is cleared and balance due, if any, on interest wiped out, the cooperative system will continue to have this burden on all its business.

8.33 Out of the unsold stocks estimated at Rs. 35 crores, some have deteriorated in quality and some will require rebagging. As all this will involve money, it will be necessary to wipe out the account on the basis of the Pool and State Governments bearing the expenditure on 50 : 50 basis. By the fact that consignment was given without ensuring a check on how the supplies were distributed, the State Governments cannot escape responsibility in the matter. It is also not possible for the States to bear all the expenses. Till, therefore, this account is cleared the apex societies will continue to take too large a share in the distribution margin instead of the margin amount of Re. 1/- to which they are entitled. Unless the position is normalised, the cooperative accounts will not be credit-worthy.

Cooperatives Concluding Observations :

8.34 The cooperative fertiliser distribution system has several advantages. The wide net-work of the cooperatives facilitates taking fertilisers within the easy reach of the farmers. The system also reaches fertiliser credit to a large number of people than what the commercial banks can do in its agricultural programme. It has also large storage capacity at its disposal which can be utilised for fertiliser distribution. These advantages have not been availed of properly by either the fertiliser producers or the Fertiliser Pool. The cooperatives complained that the fertiliser producers have been trying to slash the margins to the cooperative system and making it impossible for them to distribute fertilisers. We have dealt with all these aspects in this report. We have recommended that fair margins should be given to the various parts of the distribution system according to the responsibility undertaken by each part of the system. In addition, we have recommended that the fertiliser producers should give incentive margins specially to the cooperative system for guaranteeing bulk sales during the year and guaranteeing a regular off-take.

We have also recommended that the storage godowns put up by the cooperative system can be availed of on suitable terms by the fertiliser producers as intermediate storage points. The main complaint we were able to pin-point was about the margins for ammonium sulphate and calcium ammonium nitrate. We have dealt with this particular aspect in detail. Our recommendations may be followed by both parties. If all these recommendations are observed by all concerned, there is no reason at all why the cooperatives should not play their rightful share in the distribution system.

8.35 The cooperatives have to do a good deal of spring cleaning in their system to make fertiliser distribution more efficient. The report of the study team on fertiliser distribution margins appointed by the National Co-operative Development Corporation shows clearly that within the cooperative system there is not a fair distribution of the margins according to the responsibilities undertaken by the various parts. This is a serious observation. In addition, the Report points out that difficulties have arisen because of the following factors :–

(a) Stocks have been held for long periods; much more than the 4 months envisaged by the Committee on Fertilisers;

(b) There have been severe shortages in the Pool fertilisers despatched from the ports; and

(c) The Pool delivers fertilisers at railhead, so also the fertilisers producers. In several States, the average lead from the railhead to the retail point is much more than what can be covered with the transport margin of Rs. 10/- per tonne provided in the Report of the Committees on Fertilisers and accepted by all concerned.

8.36 The remedies for these difficulties have also been identified in our report. Long storage by the fertiliser distributor in the cooperative sector should be the exception rather than the rule. The new distribution system envisages holding-up of stocks at intermediate storage points and delivery to the retail or wholesale point just before the demand. As the cooperatives would be entitled to assess their demand and place their orders, there should be no reason for any hold-up of stocks unless cooperatives fail to make a proper assessment. If excess stocks are to be held in the Pool, it will be the responsibility of the Pool, or the State Governments. We have dealt specifically with the problem of old stocks from the Pool supplies. We would suggest that this problem be settled once for all by a suitable financial arrangement as suggested in paragraph 8.33. The old account should not clutter up the fertiliser distribution system and create difficulties all the time. As regards transport charges, we have recommended a higher average transport charge of Rs. 15 per tonne and, in addition, have suggested that the Pool should follow the programme of delivery at selected road-heads in districts where rail communications are not easy. We have recommended a similar selective approach to the fertiliser producers. This is an essential part of the distribution system. If our recommendations on these points are observed and there is a fair distribution of the margins within the cooperative system according the responsibilities undertaken, there is no reason at all why the cooperative system should not find fertiliser distribution a remunerative business. In the report of the Study Team set up by the National Cooperative Development Corporation it is observed that in the Punjab all the retail depots in the cooperative sector inspected by the Team have shown profits during the year. This is the result of an aggressive agricultural programme.

8.37 In addition to the steps to be taken to improve the cooperative fertiliser distribution system, we have suggested


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SECTION

Fertiliser Credit

9.1 Adequate arrangements for marketing to farmers will be essential for the success of t measures suggested in this Report. We have ea out that the requirement of fertilisers in 1973-74 to production levels envisaged in the Fourth Five-Year be higher than 4.1 million tonnes and nearer 5.5 millio of nutrients. We have also recommended that a specia should go into the question of fertilisers requirement to ach the production levels on the basis of the present yardsticks. The credit both to the distribution channels and to the farmer that we require in 1973-74 will have to be linked to the estimate of fertiliser requirement lying between 4.1 million tonnes and 5.5 million tonnes. In the absence of a precise estimate of fertiliser requirement, we are in this section, indicating a range of credit requirements based on these two levels of fertiliser consumption. We are also dealing with certain other aspects of credit for fertiliser distribution.

9.2 The last comprehensive review of the requirements of distribution credit and cultivators credit was undertaken by the Fertiliser Credit Committee (Venkatappiah Committee) sponsored by the Fertiliser Association of India. This Committee proceeded on the basis that the fertiliser requirements worked out by the Committee on Fertilisers for 1970-71 at 2.4 million tonnes of N, 1.0 million tonnes of P_2O_5 and 0.7 million tonnes of K_2O constituted the minimum requirements to be satisfied by 1970-71. The future pattern of credit needs (marketing credit as well as credit to cultivators) was projected on the basis of the pattern of supplies of fertilisers from the Pool and the manufacturers that was likely to evolve by 1970-71. In doing so, the Fertiliser Credit Committee assumed that the future pattern of supplies would be very much different and that along side the Pool supplies, many of the States would increasingly depend on the supplies of fertilisers from the factories. The implication of this changed pattern of supplies in terms of credit was assessed on the basis that the cooperatives would handle the entire Pool supplies and that the manufacturers would

appoint their own dealers or make other arrangements for the distribution of non-Pool fertilisers.

A. *Marketing Credit Cooperatives*

9.3 The Venkatappiah Committee considered that the production credit for fertilisers estimated to be available from the cooperatives in 1970-71 set the minimum level upto which the cooperatives in each State should handle fertilisers. It was, thus, estimated that at the minimum level of handling in 1970-71, the cooperatives would deal in fertilisers worth Rs. 268.5 crores. Where, however, the cooperatives would handle direct supplies from the manufacturers in addition to supplies from the Pool the forecast was that cooperatives would at the maximum level of handling, deal in fertilisers valued at Rs. 390 crores.

9.4 On the assumption that the credit turn-over would be twice during the year (and that margin money would be provided at one-tenth of the total distribution credit) the distribution credit requirements were assessed to vary between Rs. 120.8 crores and Rs. 175.3 crores depending on whether the cooperatives operated at the level of minimum or maximum handling as explained above.

Manufacturers and Private Dealers

9.5 To the extent to which the manufacturers undertake supplies through their own dealer net-work the Committee had estimated that at their minimum level (corresponding to the maximum of cooperative handling) the private agencies would distribute supplies worth Rs. 324.4 crores and at their maximum level (corresponding to the minimum of cooperative handling) worth Rs. 445.4 crores in 1970-71. The distribution credit requirements of the private agencies, assuming a turnover of 2.4 times during the year (and margin money at 10% of distribution finance) were estimated to vary from a minimum of Rs. 121.7 crores to a maximum of Rs. 166.9 crores in 1970-71.

9.6 For the two sectors (cooperative and private) together, the total marketing credit requirements had been estimated to be of the order of Rs. 288 to 297 crores.

B. *Cultivators' Credit*

9.7 The credit Committee had estimated the value of total sales of fertilisers in 1970-71 at Rs. 722 crores after taking into

account the increase in prices of fertilisers since the Committee on Fertilisers gave its report. On the basis that the proportion of credit sales to total sales would be 73%, the anticipated requirements of fertiliser credit for 1970-71 were estimated at Rs. 522.9 crores. Assuming that the scale of cooperative credit for inputs would be fixed from time to time in relation to the price of fertilisers and other inputs and that the cooperatives would undertake a correspondingly larger programme of loaning the Committee had estimated that credit of the order of Rs. 250 to 280 crores would be available from the cooperatives for fertilisers, constituting roughly 37% of the total cooperative credit likely to be extended in 1970-71. There would thus be a gap in fertiliser credit of the order of Rs. 240 to 270 crores.

9.8 The credit estimates made by the Venkatappiah Committee were arrived at after due allowance to the increase in fertiliser prices over the prices assumed by the Committee on Fertilisers. Since then, there has not been any appreciable increase in prices. As such, the estimates made by the Fertiliser Credit Committee based on a consumption of 4.1 million tonnes of nutrients in 1970-71 will be valid under existing conditions.

Credit Requirements for the Fourth Plan Fertiliser Target

9.9 In the Fourth Plan, the revised targets for fertiliser consumption have been fixed at 3.2 million tonnes of N, 1.4 million tonnes of $P_2 O_5$ and 0.9 million tones of $K_2 O$. At current prices, the value of fertilisers likely to be sold in 1973-74, will be Rs. 992 crores. Assuming that the proportion of credit sales to total sales will continue to be 73% as anticipated by the Fertiliser Credit Committee the credit requirements for fertilisers in 1973-74 will be of the order of Rs. 724 crores.

A. *Marketing Credit*

9.10 The Fourth Plan Working Group on Fertilisers and Manures (1969-74) has assumed that the cooperatives and the private trade between them will handle the total value of fertilisers on 50:50 basis. In other words, of the total requirements of credit for fertilisers of the order of Rs. 724 crores in 1973-74, the cooperatives and private trade together will require distribution credit to the tune of Rs. 300 crores in 1973-74, on the basis that the available funds will be turned over twice in the case of cooperative and 2.4 times in the case of private trade (with margin money at 10% of distribution finance) as assumed by the Venkatappiah Committee.

B. *Cultivators' Credit*

9.11 The cooperatives credit institutions are expected to meet about Rs. 750 crores of the short-term and medium-term credit needs by the year 1973-74. The Venkatappiah Committee had worked out that 37% of credit available from cooperatives would be for fertilisers. Assuming that the same ratio will hold good for 1973-74, it is estimated that cooperative credit of the order of Rs. 277 crores will be available for fertilisers in that year. There will thus be a shortfall in fertiliser credit to the extent of Rs. 447 crores to be met by sources other than cooperatives.

Difficulty of Small and Marginal Farmers to get Credit

9.12 There are a large number of small farmers who are economically weak and who have failed to get adequate financial support from the credit agencies for the development of agriculture. As much as 62% of the total operational holdings in the country are less than 2 hectares accounting for 19% of the cropped area. It is possible for these small farmers to benefit from improved technology in agriculture. But in so far as the small farmer has all along been considered non-creditworthy in the conventional sense, he has had to depend heavily on the money lender to fulfil his credit needs. At his present level of low assets and earning capacity, he is unable to invest adequately in order to benefit from the adoption of improved agricultural practices.

9.13 On the cooperative side, the small farmers, as a category, have received, according to the Reserve Bank's report on the Cooperative Movement in India, 1969-70, about 33.2% of the loans disbursed by the cooperatives to agriculturists. Of the total loans of Rs. 403 crores issued by the primary credit societies during 1969-70, loans to land holders upto 2 hectares each totalled Rs. 111 crores (*i.e.*, 27.5%), while borrowers with holdings above 2 hectares each accounted for about Rs. 269 crores or 66.7%. Loans issued to tenant cultivators and agricultural labourers were Rs. 23 crores. Thus, while the cooperatives have been seeking an increasingly wider coverage of the weaker sections of the farmers in terms both of the number of farmers with land holdings upto 2 hectares and the amount of credit advanced to them, the fact that the small farmer operating at a comparatively low economic level received cooperative loans per acre to the same extent and on similar terms extended to the more well-to-do farmers, brings out the inherent weakness of the cooperative system which has failed to respond to the special needs of the small and marginal farmers. If the present position of

parity of treatment between the samll and the more well-to-do farmers were to continue as a feature of the cooperative system, it appears likely that the small farmer and the tenant will be precluded from sharing in the benefits of improved agriculture. It is, therefore, necessary to change the present norms of lending in terms of requirements per acre, security, rate of interest, etc. in order that the small farmer may be helped to afford the increased outlay needed for intensive agriculture. It is also desirable that State policy should be specifically oriented to give preferential treatment in a number of ways to the small farmers. We have already noted that there is a large gap between the fertiliser credit requirements and the availability of cultivators' credit. We fell that the cultivators' credit being limited, means have to be found to ensure that a substantial portion of this credit goes to the small farmers and marginal farmers to largely meet their requirements. Apart from extending concessional credit, it will be necessary for the cooperatives to organise, among other things, supply of inputs and equipment at fair rates and long term advances for the provision of infrastructural facilities needed by them.

Direct Loaning to Cooperative Primaries

9.14 The cooperative system has been getting weaker in certain areas. In many cases, the cooperative institutions have been unable to reach the credit limit. The system is affected with heavy overdues.

9.15 The cooperative system has, however, certain built-in advantages. Fertiliser can be reached into the interior points and to a larger number of people removed from rail heads through the elaborate net-work of cooperative societies. This system has also large availability of storage which can be used for stocking fertilisers. These advantages should not be lost. A study conducted in Mysore on direct loaning to primary cooperative societies by commercial banks has shown that the experiment has given good dividends. By direct loaning, the primaries have not only been able to increase their coverage of farmers including small farmers and the amount of B component, but the recovery of overdues has also been substantial and encouraging.

9.16 Now that the principle of direct loaning to primaries by commercial banks has been accepted, it has to be extended particularly in areas where the cooperative structure has weakened. In these areas, A.C.D. Funds can also be routed through the commercial banks for direct loaning to the primaries. We feel that on the basis of the experience gathered so for, it should

be possible to do it. This system will revive the cooperative structure, ensure better coverage as well as adequate recovery of loans.

Taccavi Credit

9.17 The Committee on Fertilisers had recommended that it would be necessary to continue the system or grant of Taccavi loans for fertilisers in kind not only for the farmers outside the cooperative fold but also for those farmers who were unable to obtain adequate credit due to the weakness of the local cooperative organisation. At the time the Committee on Fertilisers made its recommendations, the Government was already investing about Rs. 30 crores on an eighteen months basis in the States for consignment credit. This was later changed to six months and the total Taccavi credit facilities were limited to one sixth of the fertilisers distributed in the State during each half year. The Fertiliser Credit Committee (Venkatappiah Committee) which went into the different aspects of Taccavi credit observed that following the reduction in the period and the amount of the credit made available from the Centre, the State Governments correspondingly attempted to reduce their commitments in regard to fertiliser Taccavi. The Fertiliser Credit Committee was, therefore, of the view that to the extent that there was a gap between the volume of production credit that was expected to be available both from the cooperatives and the commercial banks and the total requirement of fertiliser credit, there was a limited and transitional need for Taccavi which had to be met from Central assistance to the States. The Commission is also of the view that the six months' credit being given by the Centre to the States should continue to be made available to the States, where the cooperative system is weak, for running a Taccavi system of purely fertiliser distribution to the small and marginal farmers. It is this class of small and marginal farmers who suffer most because of lack of cooperative credit facilities. Arrangements will have to be made through the Taccavi system financed on six months' credit basis purely for fertilisers to provide the required fertilisers in areas where the small farmers and marginal farmers schemes are working and where a creditworthy primary society does not exist. The amount of accommodation for the purpose could be of the order of Rs. 50 to 60 crores to be turned over every six months.

9.18 The Committee on Fertilisers had further recommended that where the cooperative organisation was unable to undertake the responsibility of distributing Taccavi loans on behalf of the Government, the Block Development Organisation should provide fertiliser credit in kind at block level under this system.

In Haryana Taccavi credit for fertilisers is being advanced on the basis of Taccavi permits issued to the farmers by the Block Development Organisation. These permits are honoured by the sub-depot village societies and the rail-head primary marketing societies. The sub-depot village societies deliver fertilisers to the farmers against Taccavi permits and subsequently pass on credit sale vouchers to the rail-head agents which are thereafter consolidated and sent to the State Marketing Federation. The Federation secures the credit sales certificates in respect of each rail-head agent from the Deputy Director of Agriculture or the District Agricultural Officer concerned and after reconciliation of the account of credit sales against Taccavi permits, presents the bills to the Diretor of Agriculture for final payment. As a result of the introduction of this system, we notice that the Block Development authorities in Haryana have been able to issue Taccavi permits worth Rs. 4.55 crores during 1970-71. We strongly recommended that this system of routing Taccavi through the Block Development Organisation for increasing fertiliser sales should be adopted for the small and marginal farmer by all State Governments and given a fair trial.

Retailers' Credit Guarantee Scheme

9.19 Under the Credit Guarantee Scheme of the Government of India, a small retailer in fertiliser having a turnover not exceeding Rs. 2 lakhs in a year with an advance of not more than Rs. 40,000 at a time will qualify for cover. The claim to the Credit Guarantee Corporation in respect of any irrecoverable loan will, however, be limited to 75% of the loan, i.e. Rs. 30,000 in the case of fertilisers. At the retail level, a retailer can usually have turnover of fertilisers 2 1/2 times at the most-two seasons of kharif and rabi and some amount of turnover in between on annual crop and plantations. If the retailer does only fertiliser business, he can have stocks of Rs. 40,000 at a time and he can turn these stocks 2 1/2 times. This means a business of Rs. 1 lakh annually. This is equal roughly to 100 tonnes of Urea. The dealer will get a commission only about 2 1/2 per cent which amounts to Rs. 2,500. As this covers the dealer's expenditure on his business premises, etc. it appears that the limits provided may not be able to give him a good business out of fertiliser only.

9.20 A small trader is thus not attracted to fertiliser business. A trader dealing in groceries, for example will be getting 8 to 10 per cent return on his investment with about four turnovers a year. This explains why many such traders who had added fertiliser to their business have in many cases given up fertiliser

business. It is now difficult to interest a retailer in this business. As a result, pressure is building on the wholesaler.

9.21 In a good area, a retailer may even have a turnover of four to five times a year. The Commission, therefore, recommends that where a retailer does fertiliser business plus other business, his limit should be increased so that any time he holds Rs. 40,000 worth of fertiliser alone plus any other limit for other goods in order that the sale of fertilisers undertaken by him can be brought within the scope of the Credit Guarantee Scheme. The retailer should have a separate limit for his other business. A fertiliser sale of Rs. 40,000 at the retail level which comes roughly to 40 tonnes of Urea which is two wagon loads enables the retailer to indent in wagon loads. Viewed in this light, this limit for retail sale appears fair.

Refinancing Facilities for Fertiliser Loans

9.22 In the earlier part of this Report, we have advocated the maintenance of intermediate storage in the interest of adequate and speedy supply of fertilisers. The producer or the distributor whoever will maintain the intermediate storage will require credit. Bank credit will have to be arranged in sufficient quantity and on suitable terms to enable the maintenance of this storage on the scale and for the period considered essential, i.e. 3 months' production of the factory and 3 months' storage. It has been complained that commercial banks insist on large margins extending upto 40% for accommodation. It has also been represented that from March last year, fertiliser credit has been treated as indirect agricultural loan following a change in the definition by the Reserve Bank. As a result, refinancing facilities to commercial banks on fertiliser credit have been withdrawn. Such restrictions on fertiliser credit have to be removed if the marketing has to function smoothly. Moreover, it will be necessary to ensure that the margins requirement is substantially brought down. The Fertiliser Credit Committee (Venkatappiah Committee) had recommended that the margin might not exceed 5-10 per cent. As fertiliser prices are not expected to come down drastically and the stocks will also be pledged with the Bank, the margin in our view should not exceed 10%.

9.23 We have discussed the question relating to the credit guarantee scheme and the refinancing facilities with the Department of Banking. We have been assured that these problems will be looked into sympathetically by the Department. In our opinion these problems require early settlement on a fair basis.

9.24 We propose to deal with the question of overall problem of credit to the farmer in a separate report.

SECTION X

Quality Aspects of Fertilisers

10.1 In the study conducted by the Planning Commission, insufficient quality control of fertilisers has been mentioned as one of the five factors contributing to the fall in growth rate of the consumption of fertilisers. The Planning Commission has analysed the information collected from 9 states regarding the number of samples analysed during the period 1966-67 to 1969-70 and the number of samples found within the tolerance limit as indicated in the Fertiliser (Control) Order 1957 as amended in 1970. The information is given in the statement at Appendix XI. According to this analysis, it has been found that 18% of the samples analysed are outside the tolerance limit prescribed under the Fertiliser (Control) Order, the proportion varying between 10% to 64 % from State to State. Of the number of samples analysed during 1969-70 43.3% of CAN, 41.7% of Diammophos, 23.8% of Superphosphate, 11.4% of Urea and 13.2% of Ammonium Sulphate show decrease in nutrient content while only 9.3% of samples relating to mixtures and other fertilisers are seen to be deficient. This may be seen from the statement given at Appendix XII.

10.2 During the discussions with different State Government, the Commission had received complaints that in a number of cases, fertilisers received by the farmers have been found to be of sub-standard quality and even appear to be adulterated. The Commission cannot but be concerned at the lack of proper quality of the fertilisers received by the farmers. We feel that the strict enforcement of quality is a must for propagating the extensive use of fertilisers throughout the country. If the farmers do not get the same response from the fertilisers as demonstrated to them due to indifferent quality or adulteration, the very foundation of the promotion programme will be shaken.

Complaint regarding Sub-standard Quality of Fertilisers

10.3 The analysis of the position obtaining in the different States indicates that the complaints about sale of sub-standard/ adulterated fertilisers relate mostly to straight nitrogenous

and phosphatic fertilisers such as Ammonium Sulphate, Urea, Calcium, Ammonium Nitrate, Ammonium Phosphate, Diammonium Phosphate and Superphosphate. The situation has, however, differed from State to State. Serious complaints have been reported in Bihar and Gujarat with regard to phosphatic fertilisers and fertiliser mixtures. In Punjab and Andhra Pradesh, the complaints related to all types of fertilisers including fertiliser mixtures. Occasional complaints of adulteration have, however, been reported in all the States in respect of all types of fertilisers. There are generally no complaints of adulteration with regard to straight potassic fertilisers. The presence of a larger number of sub-standard samples in straight fertilisers than in fertiliser mixture is attributed to the increased demand for certain types of the former as a result of which fertiliser dealers are tempted to adulterate. In actual practice, it is the straight fertiliser which is subjected to a more rigorous test-check and laboratory analysis than fertiliser mixtures, even though the later afford greater scope for adulteration. Another reason may be that straight fertilisers, imported as well as indigenous, were stored over longer periods with the possibility of deterioration in quality. This is not ordinarily so with fertiliser mixtures which move into markets as and when they are needed mostly against demand during the manuring season. Moreover, they are too quickly consumed to be subjected to laboratory analysis and consequent check up. It is the long period stocking of straight fertilisers which makes it easy for the dealers to adulterate the material at different stages of distribution. In the specific case of superphosphate, the degree of adulteration has been found to be very high in comparison with other types of fertilisers including manure mixtures.

10.4 Complaints regarding quality relate both to imported fertilisers and fertilisers produced within the country. The States have reported that a greater part of adulteration takes place rather at the retail stage of distribution than at the wholesale stage. While the deterioration in quality is mainly attributed to long storage under adverse conditions in the case of imported fertilisers, the quality could be affected by weather conditions *en-route* or due to bags getting damaged during the unloading operations by the unavoidable use of hooks by port labour. The complaints are mostly based on physical sign of deterioration of the quality and to a certain extent detected after systematic analysis of fertiliser samples for nutrients and other properties. There have been no complaints that sub-standard fertilisers are produced in the country.

Factors Accounting for Deterioration in Quality

(i) Adulteration due to difference between free market price and official price of fertilisers.

10.5 Generally all the States agree that the temptation to adulterate is more when the difference between the free market price and the official price is large. Such cases of adulteration are more common when the demand for fertilisers is more than the available supply. With the general improvement in the supply position of fertilisers, the scope for adulteration on account of the price differential is becoming less than what it was in times of acute shortage of fertilisers.

(ii) Deterioration due to storage :

10.6 The longer the period of storage, the greater the likelihood of deterioration in quality. This is particularly so in respect of fertilisers which are hygro-scopic and contain free acids. Bad storage conditions exposure to atmosphere and rain, damage to bags etc., result in the deterioration of the quality of fertilisers through change on physical status and loss of soluble nutrients and other properties. When such fertilisers are mixed with non-fertiliser substances like calcium carbonate, as is the case with Calcium Ammonium Nitrate, there could be serious complaints of derterioration in the quality of fertilisers. Some work on the keeping quality of fertilisers in storage has been done and available information indicates that deterioration in quality is directly related to the period of storage. Fertilisers will keep well if proper precautions are taken for storage. It, therefore, becomes necessary that steps are taken as part of the programme of fertiliser promotion to introduce effective methods for storage of fertilisers. The Committee on Fertilisers had noted the fact that maintenance of standards of storage and packaging, has a bearing on the maintenance of quality and the prevention of adulteration at all distribution levels. The Commission reiterates this view and strongly urges that measures to introduce efficient methods of storage should be intensified so that one of the basic factors giving rise to complaints regarding loss of quality is removed.

10.7 Fertilisers under proper storage conditions will keep their quality for fairly long periods. Even so, the States are generally of the view that a period of 3 to 6 months in advance of the manuring season will be a reasonable period of storage from the point of view of quality depending upon the type of fertilisers held in stock. This will, therefore, mean that in actual practice

it will be necessary to coordinate supplies of fertilisers with market demand in such a manner that storage of fertilisers for needlessly long periods is either avoided or minimised by streamlining the distribution mechanism in the States. We have already discussed this aspect of the problem of fertiliser distribution and given on recommendations separately in this Report.

Existing Arrangements for the Analysis of Fertiliser Samples

10.8 The procedure for the drawal of fertiliser samples and the methods of analysis have been evolved on the advice of a Committee of Experts and made a part of the Fertiliser (Control) Order. This has been done in order to have uniformity in methods of sampling and analysis for the various specifications laid down in the Fertiliser (Control) Order which has been amended to empower State Governments to authorise the Fertiliser Inspectors to draw samples of fertilisers for analysis in the State laboratories. For the purpose of drawing samples, the States have variously declared the Agricultural Extension Officers, Agricultural Assistants, Block Development Officers, District Agricultural Officers, Deputy Directors of Agriculture etc. as Fertiliser Inspectors responsible for the collection and despatch of fertiliser samples. The samples are generally drawn from godowns and storage points, private as well as Co-operative, Wholesale and Retail, and thereafter sent, as the case may be, to the State Agricultural Chemists, the Agricultural Universities and the State Soil Testing Laboratories for analysis. Although the States have generally followed the standardised procedure indicated in the Fertiliser (Control) Order, it appears that there is no uniformity in the procedure adopted in the drawing and analysis of fertiliser samples. A number of States have suggested that the methods need to be further standardised and that the personnel engaged in the drawing and analysis of samples be specially trained inasmuch as lapses on their part either in drawing samples or testing them make all the difference when it comes to the question of adducing legal proof at the time of prosecutions under the penal laws relating to quality. Some of the States have suggested a re-examination of the Fertiliser (Control) Order from the legal point of view by assembling available data on prosecutions launched under the Order so that the aspect of legal proof may be further strengthened. It has been pointed out that simple matters like writing the correct name, place and date and affixing signature on the sample by the person drawing it have come up for cross-examination in legal proceedings. The question whether the

Agricultural Chemist himself does the analysis of the samples has also come up in legal proceedings. The issue thus seems bound up with the Agency/Agencies charged with the task of drawing and analysing fertiliser samples. Some of the States do not have full-fledged testing laboratories to undertake the analysis of fertiliser samples. Some have been utilising the existing soil testing laboratories for the purpose by providing additional staff and equipment. A few States have taken steps to increase the number of analytical laboratories in order to undertake analysis of a larger number of fertiliser samples. We are dealing with the aspects relating to improvement and standardisation of the procedures for drawing and analysis of fertiliser samples subsequently in this report.

Quality Control at the Manufacturers Level

10.9 The fertiliser producers have facilities for analysing their products at various stages of the process of manufacture so that the desired quality of the final product is obtained. After the in-process analysis and the testing of the final product, the material is again analysed at the time of bagging and samples are tested in their quality control laboratories. Steps have also been taken to make fertiliser bags tamper-proof by machine-stitching and by introducing metal seals on both ends of the stitched portions of the Fertiliser bags. Even so, it has been stated before the Commission that maintenance of a quality control laboratory/cell should be made compulsory as one of the conditions for licensing fertiliser factories. The Commission agrees with this view and recommends that the fertiliser factories that are licensed in future and such of those existing factories which do not have adequate facilities for quality control should be required to establish quality control of fertilisers including methods of statistical quality control at the manufacturers' level. It is also necessary that the Indian Standards Institution should address itself as quickly as possible to establish standards for fertilisers wherever such standards are not available. Thereafter, the manufacturers should be induced in their own interest to come under the I.S.I. Quality Marking system.

10.10 It is found that the use of fertiliser-pesticide mixtures is currently not in vogue. Even so, the I.S.I. should bring out standards for these mixtures in anticipation of their becoming a part of the future consumption pattern alongside the use of more and more complex granulated fertilisers.

Quality Control at the Distribution Level

10.11 The task of checking quality at various distribution levels is a difficult one but this can be tackled in a large measure if the manufacturers and the State Departments of Agriculture take steps to enlarge their activities in the matter of drawing samples at frequent intervals, analysing them and bringing the result of analysis to the attention of the farmers. For this purpose, it is necessary that each State should fix a target for the drawal and analysis of fertiliser samples according to the volume of fertilisers stocked and handled. It is also suggested that a target for collection of fertiliser sample may similarly be fixed for each district. As at present, the capacity of the quality control laboratories in the States is limited and the number of samples drawn and analysed is determined by the number of Fertiliser Inspectors engaged in the collection and despatch of samples to the laboratories. The number of samples so drawn is also dependent on the batch of manufacture which constitutes a lot and the number of containers chosen from individual lots. Some of the States have, therefore, limited the collection of samples to periods of fertiliser shortage when chances of adulteration are more. The Commission agrees with the view that the periods of sampling should coincide as far as possible with the storage time of fertilisers at the consumers' end. Apart from the number of samples to be analysed in relation to the volume of fertiliser stocked held, the time of sampling for enforcing quality control should be such as to be most effective. The appropriate time for drawing samples and analysing them will be during the months of March to June for the Kharif season and October to December for the rabi and summer season when advance build up for fertiliser stocks is in full swing. At that time, the results of analysis can be used to enforce quality control on as large a stock of fertilisers as possible. The periods will, however, vary with the cropping season in different agro-climatic regions.

10.12 It is generally felt that one sample for every 200 tonnes of fertilisers marketed or stored should be adequate to ensure a proper check on the quality of fertilisers sold at all levels. In addition, random surprise checks should also be regularly carried out by the Fertiliser Inspectors from the godowns of manufacturers. wholesalers and retailers. Some States have suggested that at least 10 per cent of stocks of all types of fertilisers at each sale point should be analysed on the basis of drawing random samples once a year. The State Government should adequately strengthen their organisational set up for quality control by equipping their laboratory for the purpose of handling an increasingly

larger number of samples. In order to ensure that sub-standard fertilisers are not sold to the farmers, it will be necessary to see that the results of the analysis of fertiliser samples are made available within 15 days from the date of drawal of samples.

10.13 In order to get over the problem of adulteration and to prevent tampering with the quality, a wide network of checking and analysis is called for. As the task of instituting quality control measures on a large scale even when undertaken may not wholly be successful, a suggestion was made that the feasibility of having small sealed packs corresponding to the needs of small farmers might be examined. Most of the States which considered this suggestion have felt that the proposal is not economically feasible as it adds to unit cost of fertilisers sold to the farmers. It has been pointed out that, as it is, some of the fertilisers are being sold in small bags of 50 Kg. weight and that it will not be practicable to sell fertilisers in bags of less than 50 Kg. Alternatively, it has been suggested that the supply of high analysis fertilisers in small scale packs of 15 to 20 Kg. corresponding to the per acre requirements of nutrients may be considered. The Commission feels that the feasibility of doing so may be examined.

10.14 Where the system of having small sealed packs is economically not feasible, the possibility of persuading farmers to buy fertilisers jointly in large packs and distribute among themselves according to individual needs has also been considered. Most of the States have said that it is difficult to persuade the farmers to buy fertilisers jointly as the suggestion involves complications with regard to correct distribution in weight and recovery of cost. The proposal, it is pointed out, is not likely to succeed because of the farmers' preference for particular types of fertilisers and the resultant difficulty of pooling their requirements with regard to each type of fertiliser in demand. The Commission, however, feels that the system may be tried by cooperatives where it should be possible to organise joint buying and distribution among members.

Standardising Methods of Sampling and Analysis

10.15 Methods of sampling and analysis need to be standardised and improved from time to time based on experience. These should be uniform all over the country and brought within the scope of the Fertiliser (Control) Order and the quality marking system of the Indian Standards Institution. The methods should be subjected to periodical scrutiny for the purpose of incorporating modifications and improvements as and when necessary.

The Commission, therefore, recommends the constitutions of a Central Committee of analytical chemists representing the Agricultural Universities, the I C.A.R., the States Agricultural Departments, the Fertiliser industry, the Indian Standards Institution and the National Test House and other quality control laboratories at the national level to undertake the task of formulating standard methods of analysis and exercising periodical reviews. Almost all the State Governments, whose views were ascertained in the matter, have welcomed the constitution of such a Central Committee for the purpose. The Commission also recommends the setting up of a Cental Laboratory to keep a continuous vigilance in the matter of updating quality control measures and disseminating information to the State laboratories. The Central Laboratory should also have arrangements for training the quality control personnel engaged in the drawing and analysis of fertiliser samples in all the States of the country.

Arrangements for Rapid Testing

10.16 Any delay in analysing the samples is likely to defeat the very purpose because the movement of fertilisers particularly during the season is often a quick process. Considerable attention, should, therefore, be paid to streamline the entire system and quicken analysis. The existing State laboratories should, therefore, be strengthened both in terms of equipment and staff so as to ensure that the results of analysis flow back to the field more rapidly. The methods of quick test, which will stand the requirements of legal proof, are still not available. There is, therefore, an urgent need to develop faster analytical procedures. Rapid chemical tests by suitably utilising the mobile soil testing laboratories should help to carry out preliminary analysis and samples found sub-standard may thereafter be subjected to analysis by conventional methods. Reliance on quick tests along, it is pointed out, may not satisfy the requirements of legal proof necessary in connection with the prosecutions under the Fertiliser (Control) Order.

Role of the Agricultural Universities

10.17 The Agricultural Universities have good facilities for analysing fertiliser samples. It should, therefore, be possible for them to develop methods of analysis which are comparatively simple and quick. While instituting research into various aspects of quality control of fertilisers, the Universities could also impart training to the quality control personnel in methods of drawing

and analysing the samples. It is suggested, in this connection, that the new quality control laboratories which are likely to be set up in future should preferably be on the campus of the Universities so that they can assist the laboratories in an advisory capacity.

Adequacy of the Fertiliser (Control) Order :

10.18 The Fertiliser (Control) Order has the objective of regulating prices of fertilisers and ensuring their quality control. The Order places certain restrictions on the manufacture, sale and distribution of fertilisers. It prohibits the sale of sub-standard fertilisers and fertiliser mixtures. The standard specifications of fertilisers with permissible tolerance limits are laid down in the Schedule to the Fertiliser (Control) Order. Under this Order, the sale or distribution of fertilisers is prohibited in the following circumstances :

(i) if the container is not marked or packed as per the provisions of the Order;

(ii) if the fertiliser is an imitation or a substitute;

(iii) if the fertiliser is adulterated;

(iv) if the container bears a fictitious name as that of the maufacturer;

(v) if the container bears a false or misleading statement;

(vi) if the substance is not a fertiliser; or

(vii) if the material's minimum percentage by weight of plant nutrient is not exhibited.

10.19 In addition, the manufacturers are also required to comply with certain packaging conditions to avoid tampering. In the case of fertilisers manufactured in this country, fertiliser bags stitched by hand should bear lead seals but no lead seals are necessary in the case of machine stitched bags. Any dealer who contravenes the provisions of the Fertiliser (Control) Order is liable to prosecution and punishment with imprisonment up to 5 years and also fine.

10.20 In actual practice, however, it is felt that the provisions of the Fertiliser (Control) Order are not adequate to book offenders. It is felt that there is a need to simplify the legal procedures involved including the procedure regarding custody and

disposal of the stocks suspected and seized by the Fertiliser Inspectors. The provisions of the Order are found inadequate particularly in the case of fertiliser mixtures in powdery forms. The dealers are often found to escape on the plea that the deterioration in quality occurred due to long storage and that they are not responsible if they were not able to sell because of lack of demand. Likewise, manufacturers also escape on the score of bad storage condition in which stocks are held by the dealers resulting in the deterioration of quality. No large scale punitive action has so far been taken under the Fertiliser (Control) Order. As prosecution under this Order takes a very long time, it is suggested that summary trials of offenders should be introduced under the Control Order. The Committee on Fertilisers had recommended that special attention should be paid by the States to the quality control of fertilisers and had noted the procedure followed in other countries like U.S.A. where the manufacturers were required to pay penalty of three times the value of the deficiency if the product was not up to the declared standard. The Committee had, therefore, recommended the amendment of the Fertiliser (Control) Order to provide for similar penalties. This point is reiterated by the Commission.

Need for a Fertiliser Act on the lines of the Insecticide Act of 1968.

10.21 The Fertiliser (Control) Order has been promulgated under the provisions of the Essential Commodities Act for regulating quality, distribution, and prices of fertilisers. The Order is amended from time to time to meet the complex problems posed by the fertiliser trade. Methods of drawal and analysis of fertiliser samples are provided by the Fertiliser (Control) Order so that laboratory analysis reports are not challenged in the Court of Law on technical grounds by offenders prosecuted under the penal laws of this Order. In the view of the Ministry of Agriculture, a separate legislative enactment for fertiliser is not considered necessary. A majority of the States, whose views were ascertained in the matter, have welcomed the introduction of a separate Act for fertilisers. Some of the States have, however felt that vigorous enforcement of the provisions of the existing Fertiliser (Control) Order will be adequate.

Authorities for Testing and Certifying Quality and instituting Legal Action.

10.22 It is generally agreed that there should be two different authorities, one for testing and certifying quality of fertilisers

and another for taking legal measures against dealers of sub-standard material. As it is, under provisions of the Fertiliser (Control) Order, Fertiliser Inspectors are empowered to draw samples and forward them to the State Control laboratories. If the results of the analysis reveals adulteration, the Fertilisers Inspector can institute prosecution in the Court of Law for contravention of the provisions of the Control Order. The analysis of the samples is, however, done by separate staff in the laboratories.

10.23 A suggestion for the enhancement of penalties under the Control Order and their deterrent enforcement as the effective means of preventing distribution of substandard fertilisers was considered. It is felt by most State Governments that instead of enhancing the penalties the criteria of penalties should be determined at the national level for uniform adoption by all the States.

Quality Control Organisation at the State Level.

10.24 In view of the increasing demand for agricultural inputs and on account of the increased responsibilities placed on the State Departments of Agriculture, it is considered essential that an officer of the rank of Joint Director of Agriculture is put in charge of a separate Input Cell to be set up in each State and is made responsible for taking such steps as are necessary for the maintenance of the quality of all inputs including chemicals and fertilisers. The Input Cell will ensure not only supplies of quality inputs but also keep a close liaison with the Centre.

10.25 Some of the State Governments have felt that it is better to provide additional equipment and staff to the analytical laboratories under a large number of Field Inspector instead of merely upgrading the rank of the Officer in charge of the implementation of the Fertiliser (Control) Order. It is also considered necessary to encourage the Field Inspectors to undergo legal training.

Extension Education of Farmers to identify Quality Fertilisers.

10.26 It is often through ignorance that the farmers who are the end users of fertilisers are deceived by unscrupulous dealers. While the deterrent enforcement of the Fertiliser (Control) Order will help to regulate quality, there is no better substitute than educating the farmers about the quality of fertilisers. The Government of India has been holding seminars on quality control

of fertilisers in various regions of the country to discuss the problems regarding quality control and create consciousness amongst the fertiliser producers and State Government Officers about quality control measures undertaken from time to time. Farmers are at present being trained in Farmers' Training Centres in the States. In these training programmes, special emphasis should be laid on the quality control of fertilisers, identification of standard materials and the legal provisions made for apprehending unscrupulous. dealers As it is, farmers are not being made aware of the legal steps taken to ensure the quality of fertilisers. Through the use of the publicity media like audio-visual aids, posters, film shows, advertisement in local newspapers and radio programmes etc., farmers should be educated with regard to the facilities available for testing of fertilisers and in distinguishing the standard material from the spurious ones. The Fertiliser (Control) Order may be translated in local languages and made available to the public at large.

Ensuring better Quality Through Minimising Number of Products Marketed.

10.27 Work of any agency entrusted with quality control will be facilitated if the number of products marketed is minimised and the marketed products are easily identifiable by means of their physical forms, namely, granular, crystalline, etc. It will, therefore, be desirable to minimise the number of fertiliser products to have better scope for enforcing quality control over them. With the rapid development in fertiliser technology, the manufacture of new high analysis and complex compound granulated fertilisers has been taken up. In future, the complex granulated pattern should replace the different types of fertilisers/fertiliser mixtures currently being manufactured in the country. This will help in ensuring better quality of fertilisers.

SECTION XI

ACKNOWLEDGEMENTS

11.1 The Commission takes this opportunity to thank individuals, institutions and officers of the Central and State Governments for their valuable suggestions, either in reply to Questionnaires or during personal discussions. We also wish to thank particularly the Directors of the Fertiliser Corporation of India, the representatives of the Fertiliser Association of India, and individual fertiliser producers, Officers of the National Cooperative Development Corporation and Central Warehousing Corporation for responding to our Questionnaires and assisting the Commission with information and their views.

11.2 Shri S.K. Mitra, Joint Director, made valuable contribution to the analysis of the problems and preparation of this Report. Shri S.M. Krishnamachar, Deputy Director personally analysed the replies to Questionnaires on the subject and assisted in the preparation of the Report and Sarvashri Chaman Lal and B.K. Pathak of the Research Division of the Commission also rendered valuable assistance.

Sd/-

B. SIVARAMAN

Vice Chariman

Members	Members	Members
Sd/- S.K. Mukherjee	Sd/- Z.A. Ahmed	Sd/- A.M. Khusro
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Sd/- M.V. Krishnappa	Sd/- B.S. Nag	

Sd/-

J.S. SARMA

Member Secretary

New Delhi
25th November 1971

APPENDIX I

Questionnaire for fertiliser Producers

1. How much fertiliser do you distribute and of what varieties and in which States in your seeding and production programmes during the years 1969-70 and 1970-71 and what are your expectations of such distribution during 1971-72 and 1972-73 ? Please give the figures State by State and year by year, for each factory.

2. What is your distribution organisation ? Do you deal directly with the wholesale and retail sales depots ? Or do you engage a distributor, sole or otherwise, for your products ? How many retailers handle your products ? Please give State-wise figures for 1971 for the States where your products are distributed factory by factory.

3. Do you use the cooperative system for distribution of your products ? If so, for what percentage of the products ? Have you had any difficulty in the performance of their contracts ?

4. Have you had any difficulties in distribution of your products through the private trade ? Has there been any difficulty in financing? How many months, advance do you give to your retail dealers ? Has there been any difficulty in collection back of advances ? What is your overall experience of risk in advance in 1969 and 1970 ?

5. Have you any organisation for promotion of fertilisers ? Please give details. Is there any correlation between the demonstration and sales in the neighbouring area ? Do your demonstrations explain the use of balanced fertilisers or use of your trade brand ? What is your organisation or base for advise on soil analysis and fertiliser application ?

6. Have you got a strong research and advisory group of agricultural scientists in your organisation to help the farmer with his problems? Have you got a system of using your distribution agencies also as advisers in crop planning and crop welfare? If not, do you think it is an essential part of fertiliser promotion?

7. What is your present pattern of production in each of your factories ? Based on your experience, do you intend to chage the production pattern in the existing factories or in the expansion proposals, if any ? Please give reasons for the proposed changes, if not inconvenient.

(APPENDIX I *cont.*)

Questionnaire on fertiliser Distribution

1. Discussions show that distribution system should not have more than one storage point at the retail sale level and stocks should move directly from factory to the retail depot. What is your view on this? Is it possible to organise such a distribution system? If not, what difficulties do you envisage ?

2. In view of the difficulty with regard to the availability of covered wagons, railway movements may be comparatively easy in the months of April, May and June and again in September and October. Is it possible for factories to organise distribution based on long haulage during these months only?

3. Buffer stock operations by the factory appear inevitable because the dealers do not want to take fertilisers in advance even if off-season rebate is given nor are the farmers willing to purchase in advance of season. It is considered that a buffer stock of about 2½ months production may have to be held near the areas of consumption. What are your views on holding buffer stocks at the factories and near the areas of consumption? What should be the size of the buffer stocks in terms of your factory's production.

4. Inasmuch as the holding of buffer stocks near areas of consumptions adds to the average storage and handling costs, how many turnovers at buffer stock godowns do you think would be necessary in order that the cost of storage is kept within limits?

5. The Railways can organise short haul movements from buffer stocks to retail depots at reasonable notice. What is the period of notice you could possibly give to the Railways in your marketing zone?

6. What is your thinking with regard to the adoption of an aggressive fertiliser promotion policy ? Have firm decisions been taken in the matter? Please furnish details of scope of operations, programme and expansion that you envisage.

7. It is complained that the margins provided for the various fertilisers for the distribution are not sufficient on the basis of present costs and interest charges. What are your ideas about revision of distribution margins?

8. If you are giving interest-free credit to the dealers, is it acceptable to you that this should be costed in the price of the fertilisers and not separately?

9. The cost of promotion and buffer-stocks-storage operations should be absorbed in the price of the fertiliser quoted by the factories and not deducted from the distribution margins. What are your views in this regard?

10. Even though distribution margins may have to be increased and promotion and buffer-stock-storage expenditure have to be absorbed in the price, do you think that with increasing production,

it should be possible to keep the issue price of fertilisers to the farmers at or below present issue prices? If not, what difficulties do you envisage in this regard?

11. Private retailers stick to distribution points and do not serve interior stations. They undercut cooperatives at rail-heads and leave the cooperatives to handle the more difficult distant areas. What should be done to remedy the situation in order that the cooperative fertiliser distribution may be given a fair deal?

12. Since the cooperatives have large storage facilities in interior areas for holding buffer stocks, are you willing to utilise these facilities and if so, at what terms keeping in view that the cooperatives have to be allowed suitable margins for utilisation of these storage facilities?

13. What special terms can be given to cooperative Apex Marketing societies for large-scale commitments?

14. What are your arrangements for ensuring sales of fertilisers in areas removed from rail-heads in your marketing zones? Have you plans for developing interior areas with potential for growth? If so, what are they?

15. There is at present a serious imbalance in the production of nitrogen and phosphatic fertilisers in the country. What is your thinking on the introduction and marketing of balanced fertilisers? Is your seeding programme being suitably adjusted?

16. Have you received any complaint regarding deterioration in the quality of your fertilisers after its issue from the factory? If so, what are the factors which contributed to the deterioration in quality during distribution? Please indicate the relative importance of these factors.

17. What procedure have you adopted for ensuring quality in the fertiliser issued from your factory? What are the possibilities of introducing a foolproof sealing in the packaging?

(APPENDIX I *cont.*)

Questionnaire on arrangements for supply of fertilisers and chemicals —Quality Aspects

Terms of reference : 2 A (v) b

Complaints are often heard about sub-standard quality of fertilisers and chemicals distributed to the farmer. This often results in the farmer's not attaining the additional benefits expected from the application of fertilisers and chemicals. The National Commission on Agriculture proposes to submit an Interim Report to the Government on the measures necessary to ensure quality of fertilisers and chemicals. The following

questions are framed with a view to eliciting information and views on the various issues connected with this problem:

1. Are there serious complaints in your State regarding the sub-standard quality of fertilisers and chemicals distributed to the farmers? If so, do such complaints relate to nitrogenous, phosphatic or potassic fertilisers, or complex-fertilisers, or chemicals? State the types of fertilisers and chemicals in respect of which such complaints are received.

2. Do the complaints relate to fertilisers/chemicals distributed in pure form, or do they relate to fertiliser-mixtures, or fertiliser pesticide mixtures?

   An analysis made in the Planning Commission on the basis of information collected from nine States indicates that of the number of samples analysed, 43.3% of CAN 41.7% of Diammophos, 23.8% of Superphosphate, 11.4% of urea and 13.2% of Ammonium Sulphate show decrease in nutrient content, while only 9.3% of samples relating to mixtures and other fertilisers are seen to be deficient. Does this apply to your state? If so, what, in your opinion, are the reasons for the more marked number of sub-standard samples in straight fertilisers including imported varieties as compared to fertiliser mixtures?

3. Do the complaints relate to imported fertilisers and chemicals, or fertilisers and chemicals produced within the country and, if so, are the complaints made at the retail stage of distribution or at the wholesale stage? What is the basis of the complaint? Is it the poor performance of the fertilisers and chemicals or is it any physical sign of deterioration of the quality, or are the complaints based on systematic analysis of nutrients and other properties?

4. Is there reason to believe that there is more adulteration when the difference between the free market price and the official price is large?

5. Is the deterioration in quality related to the period of storage? Does long storage have any effect on the quality of the fertiliser/chemicals? What is the permissible period of storage? Has any work been done in your State to study these aspects?

6. What are the existing arrangements for analysis of samples of fertilisers and chemicals? Who is responsible for collecting the samples, from whom are the samples collected, to whom are the samples sent? Who does the analysis? How are the samples drawn? Is the procedure satisfactory from the aspect of legal proof in cases of prosecution under the penal laws relating to quality? If not, what are your suggestions for improvement? Give the results of analysis done, separately for type of fertiliser, during the last three years.

7. What steps do the State Government propose to take to standardise the procedure for drawing the sample and for getting the analysis done on a systematic basis?

8. If there is a reason to believe that sub-standard fertilisers and chemicals are produced by the factories, would the solution to this problem lie in establishing Quality Control Cells and adopting methods of statistical Quality control at the manufacturer's level ? Would you suggest that all the manufacturers of fertilisers and chemicals should be induced to come under the Indian Standards Institution marking system ? Are ISI marking available for all the fertilisers and chemicals produced? Are they available for the fertiliser-pesticide mixtures? If not, do you suggest that the ISI should immediately take up the question of preparation of standards?

9. What concrete steps do you suggest so that adequate samples are drawn from the fertilisers and chemicals distributed by manufacturers through their agents, those distributed through Government departments, cooperatives, other Institutions and wholesale and retail traders? What should be the number of samples to be tested in your state and at what frequent intervals? What time-limit do you suggest for bringing results of the anlysis to the attention of the users from the time the sample is drawn?

10. In order to get over the problem of adulteration at the stage of distribution, would you suggest that small sealed fertiliser/chemical packs should be prepared and distributed corresponding to the needs of the small farmers? Is such a system economically sound? Where it is not, can the farmers be persuaded in the absence of organised cooperatives, to buy such fertilisers and chemicals jointly in large packs and distribute among themselves according to individual needs?

11. What measures do you suggest for standardising the methods of sampling and analysis? It has been suggested that a Central Committee may be entrusted with the responsibility for improving the methods of sampling and analysis. Is this necessary? Is there need for setting up a Central Laboratory where continuous vigilance can be maintained in the matter of updating quality control measures and disseminating information to State Laboratories?

12. What steps do you suggest for ensuring rapid testing? Are quick tests available?

13. What is the role of Agricultural Universities in the proposed system of analysis of quality of fertilisers and chemicals? What arrangements do you suggest for training of quality-control personnel?

14. The Fertiliser Control Order is aimed at regulating the supply of quality fertilisers. Are the provisions of the Order adequate to ensure quality supplies? What are the lacunae, if any, in the matter of taking legal action, in the Fertiliser Control Order? Has any punitive action been taken in cases where the distribution of sub-standard quality of fertilisers has been noticed? If not, why has not punitive action been taken?

15. The Fertiliser Control Order is covered by the Essential Commodities Act. It has been suggested that the provisions made under the Act are inadequate in view of the peculiar nature of the problems associated with the fertilisers. For example, it does not take into account the possibility of marketing fertiliser-pesticide mixtures. Moreover an Insecticides Act has been passed with regard to Plant protection chemicals. Is there a need for having a corresponding Act for fertilisers?

16. Do you suggest that there should be two different authorities—one for testing and certifying the quality of fertilisers and pesticides, and another for taking legal measures against dealers of sub-standard materials? Do you suggest enhancement of penalties and their deterrent enforcement as an effective means of avoiding distribution of sub-standard fertilisers and chemicals?

17. What type of organisational set up do you suggest at the State Headquarters for ensuring the quality of fertilisers? Is there a need for having a separate Input Cell under an Officer of the rank of Joint Director of Agriculture to be responsible for the maintenance of quality of all inputs in agriculture including seeds, chemicals and fertilisers?

18. What type of extension education do you suggest to educate the farmers with regard to facilities available for testing of fertiliser/chemical quality, identifying the standard materials from the spurious ones, and the legal procedure available for apprehending unscruplous dealers?

19. It has been suggested that if the number of products marketed is minimised and the marketed products are easily identifiable by means of their physical forms, namely, granular, crystalline, etc., there is better scope for enforcing quality. Do you agree?

20. With regard to plant protection chemicals, a suggestion has been made that a Central Pesticides Release Committee may be formed which will go into the whole question of effectiveness of pesticides, imported as well as indigenous, and permit their release when it is satisfied that they are not hazardous. Do you think that there is need for such a Committee? Cannot these functions be given to the Insecticides Board provided in the Insecticides Act? Under whose jurisdiction does the Insecticides Board operate? Does this prevent enlargement of the scope of its functions?

PART II*

1. From the information called by the Planning Commission regarding the results of analysis of fertiliser collected during 1966—70, it appears that there has been large difference between the number

*Sent to a few States only and the figures pertaining to these States were filled.

of samples received ( ) and the number of samples actually analysed ( ) in your State. What are the reasosn for this difference?

2. The Planning Commission study shows that out of samples analysed your State, as many as samples were sub-standard and outside the tolerance limit showing decrease in nutrient as follows :—

Upto 10%	—	Samples
10% to 20%	—	Samples
20% to 50%	—	Samples
above 50%	—	Samples

What in your opinion are the reasons for such a large number of sub-standard samples?

APPENDIX II

List of organisations which have replied to the commission's Questionnaires on fertiliser

I. *Central Agencies*

1. Department of Agriculture
2. I.C.A.R.
3. I.A.R.I.

II. *State Governments and U.Ts.*

1. Andhra Pradesh
2. Assam
3. Bihar
4. Gujarat
5. Haryana
6. Himachal Pradesh
7. Kerala
8. Madhya Pradesh
9. Maharashtra
10. Meghalaya
11. Mysore
12. Nagaland
13. Orissa
14. Punjab
15. Tamil Nadu
16. Goa, Daman & Diu
17. Laccadive Islands
18. Manipur
19. Pondicherry

III. *Fertiliser Producers*

1. Fertiliser Corporation of India.
2. The Fertilisers and Chemicals Travancore Ltd.
3. Indian Explosives Ltd.
4. E.I.D. Parry Ltd.
5. Madras Festilisers Limited
6. Coromandel Fertilisers Limited.
7. Shriram Chemical Industries Ltd.
8. The Dharamsi Morarji Chemical Co. Ltd.
9. Neyveli Lignite Corporation Ltd.
10. Hindustan Steel Ltd. (Fertiliser Plant)
11. Alembic Chemical Works Co. Ltd.
12. Gujarat State Fertiliser Company Ltd.
13. Adrash Chemicals & Fertilisers Ltd.

Appendix III

Consumption of fertilisers

(Hundred tonnes)

	Consumption								
	N			P_2O_5			K_2O		
	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69
Germany West	8,886	9,502	9,327	7,918	7,879	7,810	10,768	11,193	10,459
Yugoslavia	1,981	2,069	2,703	1,447	1,775	1,594	1,588	1,320	1,216
U.S.S.R. . .	26,560	30,890	34,540	16,640	16,970	17,480	19,020	21,360	22,100
Canada . . .	2,767	2,846	3,900	3,740	3,789	3,800	2,157	2,547	2,300
Mexico . . .	3,090	2,980	3,450	971	1,100	1,221	—	—	—
U.S.A . . .	54,677	61,575	61,986	39,051	40,400	41,688	33,038	34,405	35,068
China Taiwan .	1,598	1,612	1,710	376	383	398	519	570	619
Japan . . .	8,420	8,894	9,070	6,093	6,653	6,970	6,119	6,522	6,900
India . .	8,302	11,357	12,220	2,746	4,382	2,960	1,337	22,058	1,640

Source : Fertiliser Statistics 1969-70.

APPENDIX IV

Capacity and production of Nitrogenous and Phosphatic Fertilisers

('000 tonnes)

(Factories in Production)

	Capacity		Production					
	N	P	1970–71		1973-74		1978–79	
			N	P	N	P	N	P
1	2	3	4	5	6	7	8	9
1. *F.C.I. Ltd.*								
(a) Namrup	45	—	28	—	40	—	40	—
(b) Sindri	117	—	75	—	105	—	105	—
(c) Nangal	80	—	54	—	77	—	77	—
(d) Trombay	90	42.5	54	16	80	35	80	35
(e) Gorakhpur	80	—	68	—	73	—	73	—
2. *Other Public Sectors*								
(a) H.S. (Fert. PL) Rourkela	120	—	24	—	110	—	110	—
(b) FACT	70	26.4	33	10	55	22	55	22
(c) Neyvelilig	70	—	32	—	60	—	60	—

APPENDIX IV—*Contd.*

1	2	3	4	5	6	7	8	9
(d) Super Phos.–(Single) Unit. . . .	—	171.5	—	90	—	160	—	160
(e) Sup. Phos Single Unit	—	36.5	—	15	—	30	—	30
(f) Eyprod.N.	12	—	—	—	12	—	12	—
3. *Private Sector*								
(a) By Prod. N	8	—	17	—	8	—	8	—
(b) Varanasi (N.C.J.M.)	10	—	15	—	8	—	8	—
(c) Ennore	16	10.3	—	9	14	9	14	9
(d) Vizag.	80	73.0	61	50	73	66	73	66
(e) G.S.F.C.	216	50.0	149	30	200	45	200	45
(f) Kota	130	—	113	—	100	—	100	—
(g) KanPur	200	—	107	—	185	—	185	—
(h) D.M.C.C.	—	10.8	—	5	—	10	—	10
Total	1,344	421.0	830	225	1,200	377	1,200	377

Source : Ministry of Petroleum and Chemicals.

APPENDIX V *Contd.*

1	2	3	4	5	6	7	8	9
C. *Private Sector*								
1. Goa	175	45	—	—	125	25	155	40
II. *Possible Production from projects likely to be implemented during* IV*th Plan period but not firmed up.*								
A. *Public Sector F.C.I.*								
1. Talcher	229	—	—	—	10	—	205	—
2. Trombay (Exp)	132	132	—	—	25	25	120	120
3. Ramagundam	229	—	—	—	10	—	205	—
4. Haldia	152	70	—	—	5	2	140	65
B. *Other Public & Coop. Sector*								
1. IFFCO (Coop)	215	127	—	—	50	25	200	115
2. Cochin (Ph. II)	54	137	—	—	5	13	50	125
3. Khetri	—	100	—	—	—	25	—	90
C. *Private Sector*								
1. Mangalore	160	—	—	—	5	—	145	—
2. Tuticorin	248	70	—	—	10	5	225	65
3. Kota (Exp)	22	—	—	—	20	—	20	—
4. Coromandel (Exp)	30	8	—	—	20	5	25	7
III. *Possible prod from project likely to be implemented during* IV*th plan*								
A. *F.C.I.*								
1. Corba	229	—	—	—	—	—	205	—

APPENDIX V

Additional capacity and production of nitrogenous and phosphatic fertilisers

('000 tonnes)

	Capacity		Production					
	N	P	1971-72		1973–74		1978-79	
			N	P	N	P	N	P
1	2	3	4	5	6	7	8	9
I. *Under implementation*								
A. *FCI Ltd.*								
1. Durgapur	152	—	—	—	140	—	140	—
2. Barauni	152	—	—	—	125	—	140	—
3. Namrup II Ph.	152	—	—	—	125	—	140	—
4. Sindri	—	156	—	—	—	75	—	140
B. *Others*								
1. Cochin	152	—	—	—	140	—	140	—
2. Madras	190	85	—	—	150	78	175	78
3. FACT (Exp)	22	10	—	5	20	9	20	9
4. Super Phos. (Unit)	—	8	—	—	—	7	—	7

2. Nangal	152	—	—	—	—	—	140	—
B. *Other (Private)*								
1. D.M.C.C.	90	230	—	—	—	—	80	200
2. Coromandel	125	47	—	—	—	—	110	40
3. Tatas (Ph. II)	166	138	—	—	—	—	155	125
4. Kamptee	229	—	—	—	—	—	205	—
5. Sahu Chem. (Soda-ash Expt)	27	—	—	—	—	—	25	—
IV. *New schemes not approved*								
(a) Rajasthan Complex	—	716	—	—	—	—	—	497
(b) Hindustan Lever (c) Bharat Steel Tube Co. (d) Gorakhpur Exp. (e) Others	1172	—	—	—	—	—	835	—
Total :	4,656	2,079	—	5	985	294	4,000	1,723

Source : Ministry of Petroleum and Chemicals

Appendix VI

Soil Testing Laboratories capacity and utilisation

Name of State	Soil Testing Laboratories established by 1970–71		Samples analysed during			Percentage utilisation During 1970-71
	Number	Capacity	1968–69	1969-70	1970–71	
1	2	3	4	5	6	7
1. Andhra Pradesh	17	150,000	35,694	63,434	70,000	47
2. Assam	3	30,000	4,000	12,000	15,000	50
3. Bihar	6	100,000	20,000	22,113	30,000	30
4. Gujarat	6	95,000	41,068	67,598	87,196	92
5. Haryana	4	75,000	43,000	50,000	55,000	73
6. Jammu & Kashmir	2	16,000	8,000	9,880	10,000	62
7. Kerala	3	75,000	35,694	62,088	39,746	53
8. Maharashtra	5	41,000	11,333	18,166	25,846	63
9. Madhya Pradesh	3	40,000	8,817	24,651	36,788	92
10. Mysore	7	190,000	49,876	112,363	171,339	90

11. Orissa	5	70,000	30,000	37,040	34,231	49
12. Rajasthan	4	60,000	30,351	38,000	56,000	93
13. Punjab	12	120,000	80,000	82,000	90,000*	75
14. Tamil Nadu	8	280,000	116,247	137,612	198,137	71
15. Uttar Pradesh	25	256,000	118,513	155,538	100,000	39
16. West Bengal	3	36,000	14,888	14,852	24,150	67
Total States:	113	1634,000	6,47,481	907,335	1043,433	64
Union Territories . . .	10	92,000	30,000	32,744	35,000	38
Total All-India	123	1726,000	677,481	940,079	10,78,433	62

*Estimated

Source : Planning Commission

APPENDIX VII

Programme for Strengthening and Establishment of Soil Testing Laboratories

State	No. of labs. to be strengthened	New labs. to be set up
1	2	3
1. Andhra Pradesh	2	3
2. Assam	1	..
3. Bihar	2	2
4. Gujarat	1	1
5. Kerala	1	..
6. Madhya Pradesh	2	..
7. Tamil Nadu	1	2
8. Maharashtra	1	3
9. Mysore	..	3
10. Orissa	..	2
11. Punjab	..	1
12. Haryana	1	1
13. Rajasthan	..	3
14. Uttar Pradesh	1	1
15. West Bengal	1	3
	14	25

SOURCE : Ministry of Agriculture.

APPENDIX VIII

The F.C.I. Programme of Soil Testing for the Years 1971-72 to 1974-75

(Figures in lakhs)

Location	Existing Laboratories	Proposed Laboratories				Soil Testing Cap. (Nos.)			
		1971-72	72-73	73-74	74-75	1971-72	72-73	73-74	74-75
1	2	3	4	5	6	7	8	9	10
Eastern Zone									
1. Bihar									
(a) Static	1 (Sindri)	1 (Barauni)	1+1 (Sindri + Barauni)	1 (North Bihar)	..	0.90	1.50	1.80	1.80
(b) Mobile. . . .	2	1	1	..	..	0.54	0.72	0.72	0.72
2. West Bengal									
(a) Static	1 (Durgapur)	1 (Siliguri)	1+1 (Durga-pur + Siliguri)	1 (Midnapur)	..	0.60	1.20	1.50	1.50
(b) Mobile. . . .	—	2	1	..	..	0.36	0.54	0.54	0.54

APPENDIX VIII—*Contd*

1	2	3	4	5	6	7	8	9	10
3. Assam									
(a) Static	1 (Namrup)	..	1+1 (Nawgong + Namrup)	.. (Nawgong)	..	0.30	0.90	1.20	1.20
(b) Mobile. . . .	1	1	..	1	..	0.36	0.36	0.54	0.54
4. Orissa									
(a) Static	..	1 (Talchar)	1 ((Talchar)	1 (Bhuba-neshwar*	1+1 Bhubanes war Sambal-pur/Ber-hampur)	0.30	0.60	0.90	1.50
(b) Mobile. . . .	..	2	1	..	..	0.36	0.54	0.54	0.54
5. Madhya Pradesh									
(a) Static	..	1 (Rewa)	1 (Raipur)	1 (Raipur)	1 (Rewa)	0.30	0.60	0.90	1.20
(b) Mobile. . . .	..	1	..	1	..	0.18	0.18	0.36	0.36
			Total :	Static		2.40	4.80	6.30	7.20
				Mobile		1.80	2.34	2.70	2.70
						4.20	7.14	9.00	9.90

APPENDIX VIII—*Contd.*

PROGRAMME FOR SOIL TESTING FOR NORTHERN & WESTERN ZONES 1971—72 to 1974—75

Location	Existing Labora-tories	Proposed Laboratories				Soil Testing Cap. (Nos.)			
		1971-72	72-73	73-74	74-75	1971-72	72-73	73-74	74-75
1	2	3	4	5	6	7	8	9	10
Western Zone									
1. Maharashtra									
(a) Static	1	2	1	..	..	1.20	1.50	1.50	1.50
(b) Mobile. . . .	1	1	..	1	..	0.50	0.50	0.75	0.75
2. Andhra Pradesh									
(a) Static	1	2	..	1	..	0.90	0.90	1.20	1.20
(b) Mobile. . . .	..	1	1	..	..	0.25	0.50	0.50	0.50
3. Mysore & Kerala									
(a) Static	..	1	..	1	..	0.30	0.30	0.90	0.90
(b) Mobile. . . .	..	1	1	..	..	0.25	0.50	0.50	0.50
4. Gujarat & Tamil Nadu									
(a) Static	..	..	..	..	..	..	..	..	..
(b) Mobile. . . .	..	..	..	..	..	..	0.50	0.50	0.50
Total : (a) Static						2.40	2.70	3.60	3.60
(b) Mobile						1.00	2.00	2.25	2.25
						3.40	4.70	5.85	5.85

1	2	3	4	5	6	7	8	9	10
Northern Zone									
5. Punjab & Haryana									
(a) Static	..	1	..	1	..	0.30	0.30	0.60	0.60
(b) Mobile.	..	..	1	..	1	..	0.25	0.25	0.50
6. Uttar Pradesh									
(a) Static	1	..	1	..	..	0.30	0.30	0.40	0.40
(b) Mobile.	1	..	..	1	..	0.25	0.25	0.50	0.50
			Total :	(a) Static		0.60	0.60	1.00	1.00
				(b) Mobile		0.25	0.50	0.75	1.00
						0.85	1.10	1.75	2.00

SOURCE : Fertiliser Corporation of India.

APPENDIX IX

Total Number of Retailers (Cooperative and Private)

State	As on 1-4-1969	As on 1-4-1970	As on 1-4-1971
1	2	3	4
1. Andhra Pradesh	7,215	6,892	5,883
2. Assam	NA	NA	NA
3. Bihar	3,524	3,903	6,977
4. Gujarat	4,411	4,731	4,800
5. Haryana	2,400	2,600	2,400
6. Himachal Pradesh	1,782	1,782	1,782
7. Jammu & Kashmir	771	781	785
8. Kerala	2,964	3,437	3,756
9. Madhya Pradesh	2,478	2,713	4,818
10. Maharashtra	3,368	3,924	4,075
11. Meghalaya	NA	N.A.	N.A.
12. Mysore	4,289	4,447	4,002
13. Nagaland	..	7	11
14. Orissa	2,672£	4,009	1,829
15. Punjab	3,800	5,400	5,900
16. Rajasthzn	2,685	2,203	2, 350
17. Tamil Nadu	10,822	10,927	10,780
18. Uttar Pradesh	6,495@	6,796@	14,004@@
19. West Bengal	6,900*	7,100*	7,308
TOTAL STATES	66,576	71,652	81,460

@Does not include private depots.

@@Includes 8,000 private depots.

£Cooperatives only.

*Estimated.

SGURCE: Planning Commission.

APPENDIX X

Cooperative Retail Depots for Distribution of Fertilisers

State	Number of Retail Depots				
	1966-67	1967-68	1968-69	1969-70	1970-71
1	2	3	4	5	6
1. Andhra Pradesh	4,110	3,219	3,215	2,080	1,516
2. Assam	..	..	..	..	..
3. Bihar	4,753	4,703	2,454	1,780	1,780
4. Gujarat	2,150	3,393	3,106	2,958	2,958
5. Haryana	2,000	1,497	2,000	2,000	1,600
6. Jammu & Kashmir	761	761	771	781	785
7. Kerala	1,202	1,363	1,836	1,953	2,037
8. Madhya Pradesh	3,864	2,343	2,478	2,478	3,500
9. Maharashtra	8,000	3,318	2,228	2,359	2,417

10. Mysore	4,373	4,373	2,830	2,354	1,367
11. Orissa	3,028	2,629	2,672	2,366	500
12. Punjab	4,002	4,000	3,800	3,900	4,000
13. Rajasthan	2,626	2,543	2,485	1,800	1,600
14. Tamil Nadu	3,573	3,322	3,322	3,322	3,322
15. Uttar Pradesh	1,910	1,909	2,135	2,385	2,385
16. West Bengal	1,679	1,679	973	903	903
Total	48,031	41,052	36,505	33,418	30,670

SOURCE : Planning Commission.

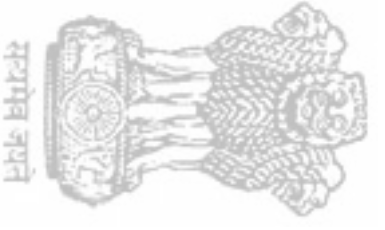
APPENDIX XI

Results of Analysis of the Fertiliser Samples Collected during 1966-70

State	No. of samples received	No. of samples analysed	No. of samples within the tolerance limit	No. of samples outside the tolerance limits showing decrease in nutrient upto				
				10%	10-20%	20-50%	Above 50%	Without specification
1	2	3	4	5	6	7	8	9
1. Andhra Pradesh	2,628	2,546	2,012	249	96	75	104	
2. Gujarat	3,288	2,654	2,404	92	53	22	82	
3. Haryana	1,283	1,220	956	170	63	21	9	
4. Madhya Pradesh	74	22	8	7	2	2	1	
5. Mysore	1,057	654	508	73	33	32	8	
6. Punjab	1,074	1,074	966	55	23	19	11	
7. Rajasthan	727	727	339	124	12	14	17	221

8. Tamil Nadu	4645	3380	2975	116	112	135	42	
9. Uttar Pradesh	1,343	1,377	1,095	112	110	62	21	67
Total.	16,119	13,654	11,183	998	504	382	295	288
(Percentage)		(100)	(81.9)	(7.3)	(3.3)	(2.8)	(2.0)	(2.7)

SOURCE: Planning Commission.



APPENDIX XII

Fertiliser-wise Results of Analysis of Samples during 1969-70

Name of Fertiliser	No. of samples analysed during 1969-70	No. decrease		No. of samples showing percentage decrease in nutrient content				
		No.	%age to the total	upto 5%	5-10%	10-20%	20-50%	Above 50%
1	2	3	4	5	6	7	8	9
Urea	642	569	88.6	26	8	2	13	8
Ammonium Sulphate	667	579	86.8	27	26	22	2	11
CAN	367	208	56.7	51	13	40	21	11
Super Phosphate	516	393	76.2	53	21	15	15	19
Ammonium Phosphate	253	232	91.7	3	3	4	9	1
Diammophos	333	194	58.3	65	57	12	4	1

Muriate of Potash	138	134	97.1	1	1	2	..	..
Other (including mixtures)	1,219	1,106	90.7	5	27	30	23	10
Total	4,135*	3,415	82.6	231	156	127	87	61
Percentage of the total				5.6	3.8	3.1	2.1	1.5

*58 samples received without proper specification.
SOURCE : Planning Commission.

MGIPRRND—4 NCA/72—N.S. II—25-11-72—5.000